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Oceans and the law of the sea

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Report of the Secretary-General**

Summary

The present report has been prepared in compliance with the request made by the General Assembly in paragraph 110 of its resolution 60/30 that the Secretary-General submit to the Assembly at its sixty-first session his annual comprehensive report on developments and issues relating to oceans and the law of the sea. It is also submitted to States parties to the United Nations Convention on the Law of the Sea, pursuant to article 319 of the Convention, to be considered by the meeting of States parties under the agenda item entitled "Report of the Secretary-General under article 319 for the information of States parties on issues of a general nature, relevant to States parties, that have arisen with respect to the Convention on the Law of the Sea". It will serve as a basis for discussion at the seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea and contains information on developments and issues relating to ecosystem approaches and oceans, the topic chosen for the seventh meeting, as recommended by the General Assembly. The report contains information on the status of the Convention and its implementing Agreements, on declarations and statements made by States under articles 287, 298 and 310 of the Convention and on recent submissions to the Commission on the Limits of the Continental Shelf. The report includes a section on capacity-building activities and elaborates on recent developments regarding international shipping, safety and security of navigation, people at sea, protection of the marine environment and conservation of marine living resources and the Indian Ocean tsunami. Finally, it provides information concerning the settlement of disputes and inter-agency coordination and cooperation.

* A/61/50.

** Owing to the page limit, the present report contains a mere summary of the most important recent developments and selected parts of contributions by major agencies, programmes and bodies.

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Abbreviations

Basel Convention	Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
FAO	Food and Agriculture Organization of the United Nations
GPA	Global Programme of Action for the Protection of the Marine Environment
IAEA	International Atomic Energy Agency
ICES	International Council for the Exploration of the Sea
ICJ	International Court of Justice
ILO	International Labour Organization
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IUU fishing	Illegal, unreported and unregulated fishing
London Convention	1972 Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto
OSPAR	Commission for the Protection of the Marine Environment of the North-East Atlantic
PSSAs	Particularly Sensitive Sea Areas
SAR Convention	International Convention on Maritime Search and Rescue
SOLAS	International Convention for the Safety of Life at Sea
SUA Convention	Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
SUA Protocol	Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization

I. Introduction

1. In compliance with the request made by the General Assembly in its resolution 60/30, the present report contains a comprehensive survey of developments in the field of ocean affairs and the law of the sea, as well as a special chapter on the area of focus for the seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea: "Ecosystem approaches and oceans". A large number of contributions containing information for the report were received from various organizations and bodies of the United Nations system, as well as other organizations. Owing to restrictions on length, only a portion of the information received could be reflected in the text. Some subjects omitted in the present report will be covered in an addendum.

II. The United Nations Convention on the Law of the Sea and its implementing Agreements

A. Status of the Convention and its implementing Agreements

2. The number of parties to the United Nations Convention on the Law of the Sea (UNCLOS or "the Convention") continued to increase, with Estonia acceding to the Convention on 26 August 2005. As at 28 February 2006, this number, which includes the European Community, rose to 149. On 26 August 2005, Estonia also expressed its consent to be bound by the Agreement relating to the implementation of part XI of the Convention. Thus, as at 28 February 2006, there were 122 parties to that Agreement, including the European Community. The status of the 1995 United Nations Fish Stocks Agreement continued to evolve as well. Kiribati acceded to it on 15 September 2005 and Guinea and Liberia did so on 16 September 2005. As at 28 February 2006, there were 56 parties to the Agreement, including the European Community.

B. Declarations and statements under articles 287, 298 and 310 of the Convention

3. Estonia made a declaration upon accession to UNCLOS, stating that as a State member of the European Community, it had transferred competence in certain matters governed by the Convention to the European Community according to the declaration made by the European Community on 1 April 1998. Estonia also declared that pursuant to article 287, paragraph 1, of the Convention, it chose the International Tribunal for the Law of the Sea established in accordance with annex VI and the International Court of Justice as means for the settlement of disputes concerning the interpretation or application of this Convention. Latvia also made a declaration under article 287 regarding the choice of procedure. On 31 August 2005, it declared that it had chosen the following means for the settlement of disputes concerning the interpretation or application of this Convention: (a) the International Tribunal for the Law of the Sea, (b) the International Court of Justice. On 14 September 2005, the United Kingdom of Great Britain and Northern Ireland nominated Judge David Anderson, CMG, as arbitrator, under article 2, annex VII, to

the Convention. There have been no new declarations or statements regarding the United Nations Fish Stocks Agreement.

III. Maritime space

A. Overview of recent developments regarding State practice, maritime claims and the delimitation of maritime zones

4. Several developments related to State practice concerning the establishment of baselines, the delineation of the outer limits of their maritime zones, as well as to the delimitation of maritime boundaries between States with opposite or adjacent coasts have taken place since the last report was issued. Only in a few cases, listed in the paragraphs below, have the States concerned informed the Secretariat officially of these developments. Owing to the constraints imposed on the length of the present report, it is not possible to convey the contents of the communications; however, in each case, references are provided to publications where they appear.

5. *Caribbean region*. The United Kingdom of Great Britain and Northern Ireland informed the Secretariat about two related proclamations, both effected on 11 July 2005, namely, Statutory Instrument 2005 No. 49: A Proclamation by His Excellency the Governor Altering the Seaward Boundary of the Fisheries Zone as it Relates to Anguilla and Establishing a Boundary between the Virgin Islands and Anguilla for all Purposes, and the Proclamation of 11 July 2005 by the Governor of Anguilla Establishing a Maritime Boundary between Anguilla and the Virgin Islands (see *Law of the Sea Bulletin* No. 59).

6. *Mediterranean Sea*. In a note verbale dated 18 August 2005, Libya transmitted to the Secretary-General the Decision of the General People's Committee No. 104 concerning straight baselines for measuring the breadth of the territorial sea and maritime zones of the Libyan Arab Jamahiriya, and the Decision of the General People's Committee No. 105 concerning the delimitation of the Libyan fisheries protection zone in the Mediterranean Sea (see *Law of the Sea Bulletin* No. 59).

7. In a note verbale dated 3 October 2005, addressed to the Secretary-General, Slovenia transmitted a statement concerning the note from the Permanent Mission of the Republic of Croatia, dated 2 September 2005, through which Croatia deposited the list of geographical coordinates defining the outer limit of the Ecological and Fisheries Protection Zone (see para. 9 below). The note from Slovenia has been circulated to all States (see *Law of the Sea Bulletin* No. 59).

8. Turkey, in a note verbale dated 4 October 2005 addressed to the Secretary-General, conveyed its position with regard to the statement of position by Cyprus with respect to the information note by Turkey, concerning Turkey's objection to the Agreement between Cyprus and Egypt on the Delimitation of the Exclusive Economic Zone of 17 February 2003 (see *Law of the Sea Bulletin* No. 59).

9. By a note dated 21 February 2006, Slovenia informed the Secretary-General of the adoption, on 4 October 2005, by the National Assembly of Slovenia of the Ecological Protection Zone and Continental Shelf of the Republic of Slovenia Act. The Act entered into force on 22 October 2005 (see *Law of the Sea Bulletin* No. 60).

10. *South-east Asia region*. On 15 July 2005, Malaysia and Singapore registered with the Secretariat the Settlement Agreement of 26 April 2005: Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v Singapore), which entered into force on the same date. The Agreement affects the issue of maritime boundaries between the two States, which is to be addressed in accordance with the Joint Record of the Meeting between Senior Officials of the Parties at The Hague from 7 to 9 January 2005 (see *Law of the Sea Bulletin* No. 59).

B. Deposit and due publicity

11. From August 2005 to February 2006, three States parties deposited with the Secretary-General charts or lists of geographical coordinates relating to baselines or maritime zones. On 31 August 2005, Latvia deposited, pursuant to articles 16 (2) and 75 (2) of UNCLOS, the list of geographical coordinates of points of the maritime boundary between Latvia and Estonia; the list of geographical coordinates of points of the delimitation of the exclusive economic zone between Latvia and Sweden, under article 75 (2) of the Convention (see *Law of the Sea Bulletin* No. 58); and three nautical charts of the Baltic Sea showing the Latvian maritime limits and boundaries. On 2 September 2005, Croatia deposited, under article 75 (2) of UNCLOS, the list of geographical coordinates of points defining the outer limit of the Ecological and Fisheries Protection Zone of the Republic of Croatia (see *Law of the Sea Bulletin* No. 59). States were informed about these deposits through Maritime Zone Notifications Nos. 54 and 55.

12. On 15 February 2006, New Zealand deposited, in accordance with articles 16 (2), 75 (2) and 84 (2) of UNCLOS, 10 nautical charts showing the baselines from which the breadth of the territorial sea is measured, together with the outer limits of its territorial sea and its exclusive economic zone, calculated in accordance with the provisions of the Convention. The charts also depict the line of the maritime boundary delimited between New Zealand and Australia by the Treaty between New Zealand and Australia establishing certain exclusive economic zone and continental shelf boundaries, signed in Adelaide on 25 July 2004. New Zealand noted that the remainder of the outer limits of the continental shelf should be depicted after New Zealand had presented its submission to the Commission on the Limits of the Continental Shelf pursuant to article 76 (8) of the Convention. States were informed about this deposit through Maritime Zone Notification No. 56.

IV. Bodies established by the United Nations Convention on the Law of the Sea

A. International Seabed Authority

13. The International Seabed Authority held its eleventh session from 15 to 26 August 2005. During that session, the Authority dealt, inter alia, with the topics detailed below.

14. *Regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts*. The Council of the International Seabed Authority completed its first reading of the draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts

proposed by the Legal and Technical Commission.[1] The Council took note of the explanatory notes provided by the Commission,[2] but considered that further explanation and elaboration were required with respect to the following aspects of the draft regulations: clarification of the relationship between prospecting and exploration; information on the proposed system of allocating exploration blocks and the way in which it might operate in practice, as well as on the proposed schedule for relinquishment and its consistency with the provisions of the Convention; and a detailed analysis of how the draft provisions relating to the proposed system for participation by the Authority might operate in practice.

15. *Application for the approval of a plan of work for exploration for polymetallic nodules in the Area.* On 21 July 2005, the Secretary-General of the International Seabed Authority received an application for the approval of a plan of work for exploration for polymetallic nodules in the Area, submitted pursuant to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area by Germany represented by the German Federal Institute for Geosciences and Natural Resources. The application area was divided into two regions and covered a total of 149,976 square kilometres in the Clarion-Clipperton Zone of the Pacific Ocean. The Council designated in each of the two regions one sector for the Authority and allocated another sector as the exploration area for Germany. The Council also decided to request the Secretary-General of the Authority to take the necessary steps to issue the plan of work for exploration in the form of a contract between the Authority and Germany.[3] The German Federal Institute for Geosciences and Natural Resources was the first applicant to join the pioneer investors registered by the Preparatory Commission and sponsored, respectively, by China, France, India, Japan, the Republic of Korea, the Russian Federation and a consortium of East European countries based in Poland.

16. *Trust funds.* At the eleventh session, noting the residual balance of the advance made by the Secretary-General to the voluntary trust fund for the purpose of defraying the cost of participation of the members of the Legal and Technical Commission and the Finance Committee from developing countries, the Assembly decided to supplement the voluntary contributions, to the extent necessary, up to $60,000 from the interest from the fund for fees paid by the pioneer investors. That supplement was made for the operation of the voluntary fund in 2006. The trust fund also received a contribution of $5,000 from Nigeria and a pledge of a further contribution of $10,000 by Trinidad and Tobago.

17. At the same session, following a proposal by the Secretary-General aimed at facilitating the participation of scientists from developing countries in international programmes of marine scientific research in the deep ocean, the Authority requested that a detailed proposal on the establishment of a voluntary trust fund and a programme for training be presented for the consideration of the Authority at its twelfth session in 2006. Details on a further proposal to establish an endowment fund from the fees paid to the Authority by the contractors would also be presented at the twelfth session. The income from that fund would be used to supplement the two voluntary trust funds of the Authority.

18. *Workshops and research programmes.* Recalling the programme of work of the Authority during 2005 and 2007, the Secretary-General of the Authority informed the Assembly that the Authority would further its efforts to promote international collaboration in marine scientific research related to activities in the Area.

19. Following a series of workshops on topics related to the deep seabed environment and resources organized over the years, the Authority entered a collaborative research project (Kaplan project) to study the biodiversity, species range and gene flow in the abyssal Pacific nodule province with a view to predicting and managing the impacts of deep seabed mining. At the eleventh session of the Authority, the Secretary-General of the Authority reported on the second annual progress report on that project, providing an account of the third Kaplan cruise, which had been completed in June 2004 under the auspices of the Institut français de recherche pour l'exploitation de la mer (IFREMER) (French Research Institute for Exploitation of the Sea). The Authority had also set up collaborations with the Chemosynthetic Ecosystems Group (ChEss) and the Seamounts Group (CenSeam). Those programmes addressed environments where polymetallic sulphides and cobalt-rich ferromanganese crusts were found. The next workshop, proposed by the Authority to be held in Kingston from 27 to 31 March 2006, will be a collaboration with CenSeam and will focus on the distribution of potentially valuable commercial deposits of cobalt-rich ferromanganese crusts in the Area, the conditions leading to the formation of such deposits, an assessment of the patterns of diversity in those areas and endemism and scales of seamount faunas and the factors that appear to drive those patterns.

20. The Authority will also hold a workshop from 31 July to 4 August 2006 that will focus on economic technological considerations for mining of polymetallic sulphides and cobalt-rich crusts.

21. The twelfth session of the Authority will be held in Kingston from 7 to 18 August 2006. The Legal and Technical Commission is scheduled to meet from 31 July to 11 August 2006.

B. International Tribunal for the Law of the Sea

22. The International Tribunal for the Law of the Sea held its nineteenth session from 7 to 18 March 2005 and its twentieth session from 26 September to 7 October 2005. The sessions were devoted to legal matters having a bearing on the judicial work of the Tribunal and other organizational and administrative matters, including a review of the Rules and judicial procedures. The Tribunal concluded administrative arrangements on cooperation with the International Bureau of the Permanent Court of Arbitration and the United Nations Environment Programme (UNEP).

23. On 1 October 2005, the Tribunal elected Judge Rüdiger Wolfrum as President of the Tribunal and Judge Joseph Akl as Vice-President. As provided for in article 12 of the statute, the President and the Vice-President are both elected for a term of three years. On 4 October 2005, the Tribunal selected new members for the Seabed Disputes Chamber, the Chamber for Fisheries Disputes and the Chamber for Marine Environment Disputes. In respect of each Chamber, the terms of office of the new members expire on 30 September 2008. In addition, on 4 October 2005, the Tribunal constituted the Chamber of Summary Procedure for the period from 1 October 2005 to 30 September 2006. On the same date, the Tribunal reconstituted its committees for the period ending 30 September 2006 and established a new Committee on Public Relations.

24. On 2 September 2005, Joe Borg, Commissioner for Fisheries and Maritime Affairs of the European Union, visited the Tribunal and made a statement. On 6 October 2005, the Tribunal hosted the first information session on the work of the Tribunal for the diplomatic corps accredited in Germany. On 24 October 2005, President Wolfrum addressed the meeting of Legal Advisers in New York and on 28 November 2005, on the occasion of the consideration of the item entitled "Oceans and the law of the sea" by the General Assembly at its sixtieth session, the President delivered a statement before the plenary of the Assembly.

C. Commission on the Limits of the Continental Shelf

25. The sixteenth session of the Commission on the Limits of the Continental Shelf was held at United Nations Headquarters from 29 August to 16 September 2005. At that session, the Commission began its consideration of the submission by Ireland, continued its consideration of the submissions by Brazil and Australia and dealt with administrative, procedural and training issues.[4]

26. In compliance with the request made at its fifteenth session, the Commission had before it a letter dated 25 August 2005 from the Legal Counsel of the United Nations conveying the legal opinion on the following question: "Is it permissible, under the United Nations Convention on the Law of the Sea and the rules of procedure of the Commission, for a coastal State, which has made a submission to the Commission in accordance with article 76 of the Convention, to provide to the Commission in the course of the examination by it of the submission, additional material and information relating to the limits of its continental shelf or substantial part thereof, which constitute a significant departure from the original limits and formulae lines that were given due publicity by the Secretary-General of the United Nations in accordance with rule 50 of the rules of procedure of the Commission?"

27. Having considered the legal opinion, the Commission took note of it and decided to act accordingly. It decided to forward the legal opinion to the four States that had made submissions so far, to post it on the website of the Commission managed by the Division for Ocean Affairs and the Law of the Sea of the United Nations Secretariat, and to issue it as a document of the Commission. During the discussion on the legal opinion, the members of the Commission agreed on the importance of due publicity given to the submissions and expressed the view that new information submitted by the coastal States during the consideration of its submission by the Commission should, in case of significant departures from the originally proposed outer limits of the continental shelf, be given due publicity. It was agreed that the coastal State should provide the content of the information to be publicized, for example, as an addendum or corrigendum to the executive summary. Many members were also of the opinion that sufficient time should be given to other States to express their views on the subject. In addition, they pointed out that States should be aware of the practical consequences in case new particulars regarding the outer limit of the continental shelf beyond 200 nautical miles were submitted during the examination of a submission. Such consequences included substantial delays in the preparation of the recommendations by the Commission.

28. The Chairman informed the Commission that at the fifteenth Meeting of States Parties, several delegations had expressed their concern regarding the consistency of rule 52 of the rules of procedure of the Commission with the provisions of article 5

of annex II to the Convention. He indicated that the Meeting had agreed that the concerns of States parties expressed at the Meeting would be reflected in the report of the Meeting and brought to the attention of the Commission. He also noted that although the Meeting had decided that individual States were free to address separate communications on the issue to the Commission, no such communications had been received to date, other than that from Brazil. The Chairman informed the Commission that the Meeting had agreed that it might revisit the matter if necessary.

29. Views were exchanged on possible mechanisms to accommodate the concerns of coastal States. The Commission decided to establish a working group and invited the group to identify possible solutions. The working group prepared a paper entitled "Draft proposals for the modification of section III (6) and section VI (15) of annex III to the rules of procedure of the Commission on the Limits of the Continental Shelf". Following a debate on the draft paper, it was proposed that the Commission adopt by consensus the draft amendments to the rules of procedure as contained in the above-mentioned paper, on the understanding that the rules would remain open to further amendment. The Commission then adopted the amendments to the rules of procedure by consensus. Since the Commission had not exhausted its deliberations of that subject matter, the item would be included in the agenda of the seventeenth session.

30. In a meeting between the officers of the three Subcommissions dealing with the submissions of Brazil, Australia and Ireland, respectively, it was agreed to follow a consistent practice regarding the interaction between the submitting State and the Subcommission under the amended annex III to the rules of procedure of the Commission. It was decided to allow for extensive interaction with the submitting State at the level of the Subcommission, by which both the State and the Subcommission might take the initiative to call for meetings. Moreover, at an advanced stage of the examination of the submission, the Subcommission would call for a meeting with the coastal State to give a comprehensive presentation on the Subcommission's preliminary views and concerns regarding the submission. The coastal State would have the opportunity to respond to the presentation within a reasonable time. The Subcommission would thereafter finalize its recommendations to be submitted to the Commission.

I. Consideration of the submission made by Ireland

31. Declan Smyth, Law of the Sea Director, Department of Foreign Affairs of Ireland, head of the delegation of Ireland, made a presentation on the submission of Ireland. Following the presentation, the representatives of Ireland responded to questions posed by the members of the Commission. Mr. Smyth also addressed issues related to the maritime claims of neighbouring States, including the positions of Denmark and Iceland, as reflected in the communications addressed to the Secretary-General in connection with the Irish submission.

32. The Commission addressed the modalities for the consideration of the submission. It decided that, as provided for in annex II to the Convention and in the rules of procedure of the Commission, the submission of Ireland would be addressed through the establishment of a subcommission. The Commission then requested the Subcommission to meet with a view to organizing its work, electing its officers and providing, on the basis of a preliminary examination of the submission, a time estimate for its work. Following the initial meeting of the Subcommission,

Mr. Jaafar informed the Commission that the Subcommission had elected him as Chairman, and Mr. Kazmin and Mr. Francis as Vice-Chairmen.

33. At the end of the sixteenth session, the Chairman of that Subcommission informed the Commission that the Subcommission had proceeded with its preliminary examination of the submission and the data accompanying it. During the sixteenth session, the Subcommission held 10 meetings. It consulted the delegation of Ireland during four meetings, from 6 to 9 September 2005. During those meetings, the Subcommission requested clarifications of either a formal or a substantive nature and posed questions in writing to the Irish delegation, which provided written responses to most of them. For the remaining ones, it was agreed that the Irish delegation would provide written answers during the intersessional period.

34. The Chairman reported that the Subcommission would require more time after the sixteenth session and had therefore decided to meet from 10 to 21 April and from 28 August to 8 September 2006. In view of the volume of work required by the examination of the submission, the Subcommission also agreed to meet for a resumed sixteenth session from 23 to 27 January 2006.

35. In the course of that week, the Subcommission continued beyond its preliminary examination into data verification and confirmation of methods and methodologies with the support of technical staff and access to the Geographic Information System facilities of the Division for Ocean Affairs and the Law of the Sea. It held five meetings with the Irish delegation, which provided further data and information, as requested by the Subcommission.

2. Consideration of the submission made by Brazil

36. The Chairman of the Subcommission established to examine the submission by Brazil reported on the work carried out during the intersessional period and during the one-week meeting preceding the sixteenth session, held from 22 to 26 August 2005. He stated that the Subcommission had undertaken further analysis of seismic, geologic, bathymetric and geomorphologic data. He informed the Commission about a meeting of the Subcommission with Brazilian experts, held on 24 August 2005, during which the experts had made a presentation on various aspects of the submission of Brazil.

37. The Chairman of the Subcommission further highlighted the volume of remaining work before the Subcommission and informed the Commission that the Subcommission expected to be able to present the recommendations at the seventeenth session, on the understanding that there would be an intersessional meeting of the Subcommission prior to the plenary part of the seventeenth session. Regarding the legal opinion of the Legal Counsel of the United Nations prepared at the request of the Commission at its fifteenth session, he noted that the legal opinion was of direct relevance to the work of the Subcommission and would need to be taken into account during further examination of the submission. The Subcommission conveyed the content of the opinion to the Brazilian experts at a meeting held on 31 August 2005.

38. During the second and third weeks of the sixteenth session (5-16 September 2005), the Subcommission made further progress in its examination of the submission of Brazil. On 9 September 2005, it held a third meeting with the

Brazilian experts. The Chairman of the Subcommission transmitted to the delegation of Brazil the letter from the Chairman of the Commission addressed to the head of the Brazilian delegation, in which the Commission invited Brazil to prepare an addendum or corrigendum to the executive summary.

39. The Subcommission also discussed and agreed on its plan of work for the intersessional period. It decided that the delegation of Brazil should be invited for a meeting during the first week of the seventeenth session of the Commission (20-24 March 2006) to conduct an exchange of views on certain substantive matters related to the submission of Brazil.

3. Consideration of the submission made by Australia

40. The Chairman of the Subcommission established to examine the submission by Australia reported on the work carried out during the intersessional period, in particular during the intersessional meeting held from 27 June to 1 July 2005. The Chairman indicated that before the beginning of the intersessional meeting, the Subcommission had received all the additional information it had requested from the delegation of Australia at the fifteenth session of the Commission. During the intersessional meeting, the Subcommission had transmitted to the Australian delegation further questions to which answers had been received before the sixteenth session. They were currently being reviewed by the Subcommission. The Subcommission had made considerable progress in the examination of the submission of Australia by the end of the intersessional meeting.

41. During the sixteenth session, the Subcommission held four meetings with the Australian delegation. The Subcommission aimed to submit its final recommendations to the Commission in time for it to be considered by the Commission before the next election of the members of the Commission. The Chairman underlined the fact that, in view of the volume of work that the examination of the submission by Australia entailed, the Subcommission had scheduled six weeks of resumed meetings to work in the premises of the Division for Ocean Affairs and the Law of the Sea in 2006, in addition to the individual work of the Subcommission members in the intersessional periods. It was agreed that the resumed meetings of the Subcommission in 2006 would take place from 27 to 31 March, from 10 to 21 April and from 28 August to 15 September, respectively.

4. Future sessions of the Commission on the Limits of the Continental Shelf

42. The Commission on the Limits of the Continental Shelf decided that two sessions would be held in 2006. The seventeenth session would be held from 20 March to 21 April, on the understanding that the following periods would be used for the technical examination of submissions at the Geographic Information System laboratories and other technical facilities of the Division for Ocean Affairs and the Law of the Sea, from 20 to 31 March and from 10 to 21 April 2006. The eighteenth session would be held from 21 August to 15 September 2006, on the understanding that the following periods would be used for the technical examination of submissions at the Geographic Information System laboratories and other technical facilities of the Division, from 23 August to 5 September and from 11 to 15 September 2006. In its resolution 60/30, the General Assembly approved the convening of those sessions by the Secretary-General of the United Nations.

V. Capacity-building activities of the Division for Ocean Affairs and the Law of the Sea

43. The General Assembly has repeatedly underlined the importance of capacity-building in the field of the law of the sea, in particular, in its resolutions on oceans and the law of the sea. Resolution 60/30 contains 11 paragraphs on the subject. The Division for Ocean Affairs and the Law of the Sea has intensified its capacity-building activities commensurate with the growing commitment of the United Nations to capacity-building in this area.

44. The increase in capacity-building activities by the Division includes the provision of advisory services; administration of trust funds; organization of briefings and training programmes; preparation of studies, handbooks and publications, including the publication in English, French and Spanish of the final version of the Training Manual for the delineation of the outer limits of the continental shelf beyond 200 nautical miles and for the preparation of submissions to the Commission on the Limits of the Continental Shelf; maintenance of databases; administration of fellowship programmes; and dissemination of information through its website. There is a growing emphasis on proactive initiatives to better equip States to face the challenges of implementing the Convention and to derive benefits therefrom. In addition to the activities described in paragraphs 45 to 51 below, the Division is actively exploring new emerging areas of capacity-building needs of developing countries.

A. Briefings to General Assembly delegates

45. The fourth annual briefing on "Developments in Ocean Affairs and the Law of the Sea", organized jointly by the Division for Ocean Affairs and the Law of the Sea and the United Nations Institute for Training and Research was held on 3 and 4 October 2005, with a view to facilitating the negotiations of the draft resolutions related to the item entitled "Oceans and the Law of the Sea" during the sixtieth session of the General Assembly. Presentations were made on subjects such as: sustainable fisheries; marine debris; marine biodiversity; the open-ended informal consultative process on oceans and the law of the sea; the implementation of the Convention and related agreements and instruments; the continental shelf and the work of the Commission on the Limits of the Continental Shelf; and maritime safety and security and flag State implementation. Approximately 50 participants attended the briefing, which received very positive feedback. The next briefing, which will have a similar focus, is tentatively scheduled to be held in October 2006.

B. Hamilton Shirley Amerasinghe Memorial Fellowship Programme

46. The recipient of the 2004 nineteenth Amerasinghe Fellowship Award, Milinda Gunetilleke, is currently doing his research/study on legal issues relating to the continental shelf at the Lauterpacht Centre for International Law at the University of Cambridge, United Kingdom. He is expected to carry out his three-month internship programme with the Division for Ocean Affairs and the Law of the Sea starting in March 2006. The 2005 twentieth fellowship was awarded to Marvin T. Ngirutang from Palau and arrangements are under way for his placement at a suitable

educational institution. In 2005, contributions to the fellowship fund were received from Ireland, Monaco, Namibia, Sri Lanka and Trinidad and Tobago.[5]

C. United Nations-Nippon Foundation Fellowship Programme

47. The United Nations-Nippon Foundation Fellowship Programme has awarded 20 fellowships to government officials and other mid-level professionals to undertake advanced academic research in the field of ocean affairs and the law of the sea or related disciplines. The first 10 fellows (nationals of the Bahamas, Bangladesh, Bulgaria, Cambodia, the Libyan Arab Jamahiriya, Mauritius, Peru, the Philippines, Saint Lucia and Viet Nam) have completed the Programme following the completion by 8 of them of their three-month term at the Division for Ocean Affairs and the Law of the Sea, by 1 of them at the International Maritime Organization (IMO) and by 1 at the International Tribunal for the Law of the Sea. The second group of fellows (from Chile, Georgia, Indonesia, Madagascar, Mozambique, Myanmar, the Solomon Islands, Sri Lanka, Thailand and the United Republic of Tanzania) are commencing the Programme's first phase with prestigious participating academic host institutions. Most of them will continue their fellowship at the Division.[6] Despite the fact that the Programme has been in existence for a short time, it has already acquired wide recognition by developing countries and academia.

D. Training courses to promote compliance with article 76 of the Convention

48. Pursuant to General Assembly resolutions 59/24 and 60/30, the Division for Ocean Affairs and the Law of the Sea has continued the delivery of training courses for technical and administrative staff of developing coastal States regarding the delineation of the outer limits of the continental shelf beyond 200 nautical miles and the preparation of submissions to the Commission on the Limits of the Continental Shelf in conformity with the provisions of article 76 of UNCLOS.

49. In collaboration with the Government of Ghana and the Commonwealth secretariat, and with the support of the African Union and the Economic Community of West African States, the Division organized a course in Accra, from 5 to 9 December 2005. Fifty-four technical and administrative staff from 16 developing States of the African region bordering the eastern Atlantic, which may have an extended continental shelf (Angola, Benin, Cape Verde, Côte d'Ivoire, the Democratic Republic of the Congo, Gabon, the Gambia, Guinea, Guinea-Bissau, Mauritania, Namibia, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone and Togo), participated in the course. Instructors for the course included past and present members of the Commission and staff of the Division.

50. A fourth training course will be held in Argentina from 8 to 12 May 2006 for the Latin American and Caribbean developing States that may have an extended continental shelf. About 25 trainees are expected to take part in this training course.

51. The Division for Ocean Affairs and the Law of the Sea trained a total of 122 technical and administrative staff from 38 developing coastal States during the first year of delivery of training courses on the delineation of the outer limits of the

continental shelf beyond 200 nautical miles and the preparation of submissions to the Commission on the Limits of the Continental Shelf.[7] Despite the fact that the programme has been in existence for a short time, it has already acquired wide recognition and the individual courses received very positive feedback from the participants.

VI. Trust funds

52. *Trust fund for the purpose of defraying the cost of participation of the members of the Commission on the Limits of the Continental Shelf from developing States in the meetings of the Commission.* At the fifteenth session of the Commission on the Limits of the Continental Shelf, in April 2005, a total of five members received assistance from this fund. At the meeting of the Subcommission examining the submission of Australia, three members of the Commission received assistance. Two members of the Commission received assistance in respect of a meeting of the Subcommission examining the submission of Brazil in August 2005. At the sixteenth session in August/September 2005, a total of five members received assistance from this fund. The total expenditure from the fund during 2005 amounted to approximately US$ 106,290. A total of $50,000 was contributed by Iceland to the fund in 2005. No other contributions were made during that year. As of the end of 2005, the total reserves and fund balances was estimated to be $39,564.00. That sum will only cover assistance for the participation of members of the Commission from developing States to attend one more session.

53. *Trust fund for the purpose of facilitating the preparation of submissions to the Commission on the Limits of the Continental Shelf for developing States, in particular the least developed countries and small island developing States, and compliance with article 76 of the United Nations Convention on the Law of the Sea.* The Government of Ireland notified the Secretariat in September 2005 that it would contribute the sum of €120,000, which would be paid in three annual instalments of €40,000. Iceland contributed $100,000 to this trust fund in 2005. The expenditure from the fund in 2005 amounted to approximately $239,712. As of the end of 2005, the total reserves and fund balances was estimated to be $1,053,773.[8]

54. *International Tribunal for the Law of the Sea Trust Fund.* As of 31 December 2005 the Fund had total assets of $70,621.17. No expenditures were incurred and no contributions were made to the Fund in 2005. In that year, following consideration of the application by Guinea-Bissau for financial assistance from the trust fund to defray the expenses that it will incur in connection with the application to the Tribunal filed by the Government of St. Vincent and the Grenadines against the Government of Guinea-Bissau for the release of the arrested vessel *Juno Trader* and its crew, the Secretary-General decided to award $20,000 to Guinea-Bissau, upon recommendation from a panel of experts. To date, no request for that reimbursement has been made.

55. *Assistance fund under part VII of the 1995 United Nations Fish Stocks Agreement.* There were no disbursements from this fund in 2005. As at 31 December 2005, Iceland, Norway and the United States of America had made contributions to the Fund totalling $345,469.65.[9]

56. *Voluntary trust fund for the purpose of assisting developing countries, in particular least developed countries, small island developing States and landlocked*

developing States, in attending meetings of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. Representatives from the following 17 countries received assistance to attend the sixth meeting of the Informal Consultative Process: Angola, the Bahamas, Cambodia, Cape Verde, Costa Rica, Honduras, Jamaica, Kiribati, Mauritania, Mongolia, Palau, Panama, Peru, Saint Kitts and Nevis, Samoa, Sierra Leone and Tonga. The total expenditure from the fund during 2005 amounted to $62,202.18. As of 31 December 2005, the total reserves and fund balances of the fund amounted to $135,324.68. No contributions were made in 2005.

VII. Developments relating to international shipping activities

57. Shipping is of vital importance for the global economy. Sea transport remains by far the most cost-effective way to move goods and raw materials in quantity around the world and most of global trade is carried in ships. In addition, activities related to shipping provide an important source of income, in particular to many developing countries, for example from the registration of ships, the supply of seagoing manpower and ship recycling, as well as shipowning and operating, shipbuilding and repair and port services.[10] Apart from those economic benefits, there are many significant issues for international shipping, such as ensuring the safety of life at sea, the safety of navigation and the protection of the marine environment (see also sects. VIII and XI below). Most of those activities are regulated at the global level.

A. Economic aspects of shipping

58. According to the United Nations Conference on Trade and Development, world seaborne trade increased strongly in 2004, reaching 6.76 billion tons of goods.[11] There was a 4.5 per cent increase in the world merchant fleet owing to a rise in newly built ships and a 50 per cent decrease in tonnage broken up and lost. Ship size also increased, reflecting the building of larger vessels to achieve economies of scale. The average age of the world fleet dropped marginally to 12.3 years. However, 27.3 per cent of the fleet is still over 20 years of age.[12] Tonnage registered in developed market-economy countries grew at a rate of 4.9 per cent and nationals of those States owned two thirds of tonnage registered in major open-registry countries, which had also increased by 11.5 per cent. The share of the world fleet registered in developing countries also increased, predominantly as a result of investments by shipowners in Asian developing countries, whose fleets expanded by 14.6 per cent, accounting for 77 per cent of the developing countries' total fleet.[13] Of the total number of large-scale fishing vessels, 6.5 per cent were registered in major open-registry countries. Those vessels represent 9.4 per cent of the capacity of all large-scale fishing vessels.[14]

B. Safety of navigation

59. Creating the conditions that enable the safe and efficient navigation of ships through the world's oceans is primarily the responsibility of flag States under UNCLOS and several other legal instruments. With regard to straits used for

international navigation, UNCLOS provides that user States and States bordering a strait should, by agreement, cooperate in the establishment and maintenance of necessary navigational and safety aids or other improvements in aid of international navigation and the prevention, reduction and control of pollution from ships. Recent efforts have focused on realizing that objective (see paras. 69-70 below). Coastal States also have rights and duties under UNCLOS and other instruments with respect to the safety of navigation and protection of the marine environment. The Convention carefully balances the rights of navigation of the flag State with those of the coastal State.

1. Transport of radioactive materials

60. Radioactive materials are transported by sea for use, for example, in medical and health applications, power generation, consumer products, industrial processes and research. Historically, the safety record of maritime transport of radioactive materials has been excellent.[15] However, concerns have been expressed about the potential for damage in the event of an accident or incident during transportation by sea, including pollution of the marine environment.[16] Such concerns have prompted some States to call for the complete cessation of the transport of radioactive materials by sea, while some commercial carriers, ports and handling facilities are refusing to accept radioactive materials.[17]

61. In paragraph 46 of its resolution 60/30 on oceans and the law of the sea, the General Assembly notes that cessation of the transport of radioactive materials through the regions of small island developing States is an ultimate desired goal of such States and some other countries, and recognizes the right of freedom of navigation in accordance with international law. States are encouraged to maintain dialogue and consultation, in particular under the aegis of the International Atomic Energy Agency (IAEA) and IMO, with the aim of improving mutual understanding, confidence-building and enhanced communications in relation to safe maritime transport of radioactive materials. States involved in the transport of such materials are urged to continue to engage in dialogue with small island developing States and other States to address their concerns, including the further development and strengthening, within the appropriate forums, of international regulatory regimes to enhance safety, disclosure, liability, security and compensation in relation to such transport.[18] Paragraph 46 is virtually identical to paragraph 56 (o) of the 2005 World Summit Outcome,[19] which in turn reproduces almost verbatim paragraph 25 of the Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States.[20]

62. In its resolution 60/30, the Assembly also encourages States concerned to continue their efforts in the implementation of all parts of the IAEA Action Plan for the Safety of Transport of Radioactive Material.[21] Recent developments in that regard include the issuance of the 2005 edition of the IAEA Regulations for the Safe Transport of Radioactive Material and the approval by the Board of Governors of IAEA, in June 2005, of a policy for reviewing and revising the Regulations every two years, consistent with the schedule of the United Nations Subcommittee of Experts on the Transport of Dangerous Goods and of the relevant international modal organizations, such as IMO. During 2005, IAEA also continued to assist States in assessing and enhancing the implementation of the Agency's transport safety standards through Transport Safety Appraisal Service (TranSAS) missions. A TranSAS mission was provided to Japan in December 2005.

63. Denial of shipments remains a major problem if radionuclides are intended for use in medical prevention, diagnosis and treatment and the only means of transport is by sea or air. For example, cobalt-60, which has a broad range of health and medical applications, including for the prevention of the spread of disease and infection and the treatment of cancer, relies exclusively on sea transport for its delivery.[22] The IMO Assembly, in its resolution A.984(24), invited member Governments to recognize the beneficial uses of the IMDG (International Maritime Dangerous Goods) Code class 7 radioactive materials in packaged form used in medical or public health applications and to facilitate their expeditious transportation. Member Governments and non-governmental organizations with consultative status were urged to bring to the attention of the Facilitation Committee any instances, together with the associated reasons, where the carriage of radioactive materials, including those in packaged form used in medical or public health applications, encountered difficulties or were refused aboard ship or in or through ports, so as to enable the Committee to consider the matter further in cooperation with IAEA.[23] In September 2005, the IAEA General Conference encouraged the IAEA secretariat to continue to address the denial of shipments, including by establishing a steering committee to oversee the resolution of the problem.[24] Denial of shipments, the physical testing of spent fuel casks and emergency preparedness and response were some of the topics addressed at the IAEA Safety of Transport of Radioactive Materials: Seminar on Complex Technical Issues held in January 2006.

64. Regarding liability for nuclear damage, the International Expert Group on Nuclear Liability has progressed in its work on mechanisms to address potential gaps and ambiguities in the existing international nuclear liability regime. It also organized a regional workshop in Australia in November 2005 and is organizing one in Peru in early 2006.

65. The importance of maintaining dialogue and consultation aimed at improving mutual understanding, confidence-building and enhanced communication in relation to the safe maritime transport of radioactive materials has been emphasized by the IAEA General Conference. In its resolution GC(49)/RES/9, the Conference welcomed the informal discussions on communication which had taken place in July 2005 between a group of shipping States and relevant coastal States, with the involvement of IAEA, and noted the intention of those States to hold further discussions.

66. Recent developments at the regional level include the adoption of the Declaration of Panama, in June 2005, in which the Heads of State and/or Government of the Association of Caribbean States reiterated their strenuous and forceful rejection of the continued use of the Caribbean Sea for the shipment and trans-shipment of nuclear material and toxic waste, given the threat that any accidental or deliberately induced spill of those materials would represent to the life and ecosystem of the region. They called on countries that produce nuclear and toxic waste to implement urgently measures to establish reprocessing facilities to eliminate the need for trans-shipment of that waste. Without prejudice to the foregoing, they recognized their international obligations, in particular under UNCLOS and relevant IMO instruments. They urged those countries currently involved in the production and shipment of nuclear waste to adopt measures aimed at strengthening international cooperation in order to comply with security measures

on transportation of radioactive material, especially those adopted by the IAEA General Conference at its forty-seventh session.[25]

67. In October 2005, Pacific Islands Forum members reiterated concerns about the risks of economic loss in an incident involving the shipment of radioactive materials through the Pacific and restated their views that in the event of losses directly attributable to such an incident, it was imperative for the shipping States not to leave the States suffering those losses unsupported.[26]

68. During the consideration of the agenda item on "Oceans and the law of the sea" by the General Assembly at its sixtieth session, several delegations addressed the transport of radioactive materials by sea. Some expressed the view that the Assembly resolution on oceans and the law of the sea should not have included or does not adequately reflect the issue of the transport of radioactive materials by sea and that owing to its technical nature, it should only be raised in IAEA and IMO. Others firmly supported the sentiments expressed in paragraph 46 of the resolution and considered the Assembly to be the appropriate forum to address the complexity of the issue in all its many aspects.[27]

2. Straits used for international navigation

69. Safety of navigation and environmental protection in straits used for international navigation, in particular in the Straits of Malacca and Singapore, continue to be the focus of attention of the States bordering straits and user States. Also of major concern are threats to maritime security (see paras. 95, 102 and 105 below). In paragraph 56 of its resolution 60/30, the General Assembly calls upon user States and States bordering straits used for international navigation to cooperate by agreement on matters relating to navigational safety, including safety aids for navigation, and the prevention, reduction and control of pollution from ships, thus echoing the provisions of article 43 of UNCLOS.

70. The sovereignty of the States bordering the Straits of Malacca and Singapore and their primary responsibility for the safety of navigation, environmental protection and maritime security in the Straits was reaffirmed in the Batam Joint Ministerial Statement on the Straits of Malacca and Singapore of 2 August 2005.[28] In that statement, the Ministers of Indonesia, Malaysia and Singapore call upon user States, relevant international agencies and the shipping community to assist them in the areas of capacity-building, training and technology transfer and other forms of assistance in accordance with UNCLOS. The States bordering the Straits and IMO then convened a meeting in Jakarta on 8 September 2005, with the aim of agreeing on a framework for cooperation to enhance the safety of navigation, environmental protection and security in the Straits. The Jakarta Statement on Enhancement of Safety, Security and Environmental Protection in the Straits of Malacca and Singapore[29] emphasizes the need to balance the interests of the littoral States and the user States, while respecting the sovereignty of the littoral States. It acknowledges the rights and obligations of States under the international law of the sea, including the provisions of UNCLOS and, in particular, article 43. The importance of engaging the States bordering the funnels leading to the Straits and the major users is also recognized. It was agreed that a mechanism should be established by the three littoral States to meet on a regular basis with user States, the shipping industry and others with an interest in the safe navigation through the Straits to discuss issues relating to the safety, security and environmental protection of the Straits, as well as

to facilitate cooperation in keeping the Straits safe and open to navigation, including exploring possible options for burden-sharing, and to keep IMO informed, as appropriate, of the outcome of such meetings. The meeting invited IMO to consider, in consultation with the littoral States, convening a series of follow-up meetings.

71. During the course of the meeting, a memorandum of understanding by and among the Governments of Indonesia, Malaysia, Singapore and IMO for the implementation of a regional Marine Electronic Highway demonstration project in the Straits of Malacca and Singapore was signed as well as a memorandum on arrangements by and among Indonesia, Malaysia, Singapore, IMO, the International Hydrographic Organization, the International Association of Independent Tanker Owners and the International Chamber of Shipping to implement specific activities of article 4 of the memorandum of understanding on the Marine Electronic Highway.[30]

C. Implementation and enforcement

72. Safety of navigation, decent working conditions for seafarers, prevention of pollution of the marine environment, conservation and management of living marine resources and the prevention of illicit activities at sea primarily depend on the exercise of effective control by flag States over ships flying their flag and their implementation and enforcement of applicable international law. Indeed, lack of effective flag State control can leave the shipping industry vulnerable to potential misuse by terrorists or criminals. Greater vigilance and transparency are therefore required in ship registration, especially in cases where shipping registers are promoting the fact that they are committed to protecting the identity of beneficial owners (see also A/59/62/Add.1, para. 72). In its resolutions on oceans and the law of the sea, the General Assembly has repeatedly urged flag States which do not have an effective maritime administration and appropriate legal frameworks to establish or enhance the necessary infrastructure, legislative and enforcement capabilities to ensure effective compliance with, and implementation and enforcement of, their responsibilities under international law and, in the meantime, to consider declining the granting of the right to fly their flag to new vessels, suspending their registry, or not opening a registry. It has called upon flag and port States to take all necessary measures consistent with international law to prevent the operation of substandard vessels. Port States have been responding to this call. For example, some port States are changing their inspection regime to a system of risk-based profiling of ships.[31]

73. The extent to which a flag, port or coastal State complies with and enforces the requirements of the IMO conventions to which it is a party can now, at the request of that State, be audited by IMO in accordance with the Framework and Procedures for the Voluntary IMO Member State Audit Scheme, which was adopted by the IMO Assembly on 1 December 2005 (Assembly resolution A.974(24)). The adoption of the scheme heralds a new era for IMO in which the Organization has, at its disposal, a tool to achieve harmonized and consistent implementation of IMO standards at the global level. The enactment of appropriate legislation, its implementation and enforcement are the three key issues on which a member State's performance will be measured under the audit scheme. The Code for the implementation of mandatory IMO instruments, adopted by the IMO Assembly as resolution A.973(24), will serve as the audit standard for the scheme, in addition to providing guidance on the implementation and enforcement of IMO instruments. The IMO Assembly urged

Governments to volunteer to be audited in accordance with the audit scheme. Upon receiving a request for audit from a member State, the Secretary-General of IMO will appoint an audit team leader who will discuss and agree on the scope of the audit with the member State. The audit will commence after the signing of a memorandum of cooperation by the Secretary-General and by the member State, which will set out the scope and time frame of the audit. To ensure that Member States' audits can commence in 2006, an adequate pool of trained auditors is to be established by mid-2006, based on nominations by member States of qualified auditors for training under the provisions of the scheme. It is expected that between 20 to 30 audits will be conducted during the biennium 2006-2007. The scheme's technical cooperation global programme will have a key role to play in supporting the training programme.

74. The audit should help identify where capacity-building activities would have the greatest effect and enable appropriate action to be much more focused. Individual member States volunteering to be audited will receive valuable feedback, and lessons learned can be provided to all IMO member States so that the benefits are shared. The results of this learning experience will also assist the regulatory process at IMO, in particular the development of provisions for the possible future inclusion in the audit scheme of other safety and environmental protection issues as well as maritime security, as envisaged by the IMO Assembly in its resolution A.975(24) on "Future development of the Voluntary IMO Member State Audit Scheme".

VIII. People at sea

75. Concerns about safety of human life at sea remain prevalent since many seafarers, fisherman, migrants and passengers continue to lose their lives at sea. The number of migrants, asylum-seekers and refugees risking their lives trying to cross sea borders clandestinely remains high, while seafarers' lives continue to be threatened mainly by acts of piracy and armed robbery at sea. For fisherman, occupational fatalities remain extremely high. Substandard ships also remain one of the factors affecting the safety of people at sea. The *al-Salam Boccaccio 98* ferry disaster in Egypt, in February 2006, highlighted again the vulnerability of passengers at sea.[32] In order to address all these concerns, various initiatives have been undertaken to better ensure the safety of people at sea.

A. Seafarers

76. Regulation of labour conditions for seafarers is required at the global level since seafarers undertake work outside their home country and their employers are often not based in the same country.[33] Moreover, recent inspection campaigns to verify compliance with current International Labour Organization (ILO) standards have revealed a high percentage of deficiencies relating to working arrangements.[34] These and other concerns regarding the working conditions of seafarers have led to calls for more effective international standards to ensure the well-being, health and safety of seafarers, as well as the safety of the ships on which they work.

77. The Maritime Labour Convention was adopted by ILO on 23 February 2006 at the maritime session of the International Labour Conference, which took place from

7 to 23 February 2006. The Convention consolidates 68 existing ILO conventions and recommendations adopted since 1920 into a single agreement comprising three parts: the articles; the regulations; and the Code. A reference to UNCLOS is included in the preamble. The Code is divided into mandatory standards (part A) and non-mandatory guidelines (part B). It covers five general areas: minimum requirements for seafarers to work on a ship; conditions of employment; accommodation, recreational facilities, food and catering; health protection, medical care, welfare and social security protection; and compliance and enforcement. It contains new subjects to meet current health concerns, such as the effect of noise and vibration on workers (see also A/60/63, paras. 64-66).

78. The Convention also contains a stronger compliance and enforcement system, based on cooperation among all ratifying States.[35] For certain categories of ships, shipowners are required to develop and carry out plans to ensure that the applicable national laws, regulations or other measures to implement the Convention are actually being complied with. The flag State will have to review the shipowner's plan and verify and certify its implementation. Ships will then be required to carry a maritime labour certificate and a declaration of maritime labour compliance on board. The declaration summarizes the national laws or regulations implementing 14 of the standards in the Convention, such as requirements on minimum age, medical certification, on-board medical care, hours of work or rest and manning levels. The declaration also sets out the plan of the shipowner for ensuring that the standards will be maintained on the ship between inspections. The certificate and declaration are to provide prima facie evidence of compliance with the requirements of the Convention.

79. The Convention also contains measures providing for inspection in foreign ports and a clause that will keep the ships of a State that has not ratified the Convention from being treated more favourably than ships flying the flag of a State that has done so. The port State control mechanism builds upon well established arrangements under the various regional memorandums of understanding on port State control. Furthermore, an accelerated amendment procedure for the Code provisions has been adopted. The Convention will strengthen the legal regime in UNCLOS relating to labour conditions.

80. The need to ensure the protection of the rights of seafarers in view of the growing use of criminal proceedings against them, in particular their prolonged detention, as a result of a maritime accident was reiterated in resolution A.987(24) adopted by the IMO Assembly (see also A/60/63, para. 67, and A/60/63/Add.2, para. 29). The resolution requests the Joint IMO/ILO Ad Hoc Expert Working Group on the Fair Treatment of Seafarers in the Event of a Maritime Accident to finalize guidelines on this issue as a matter of priority. It invites member Governments and non-governmental organizations with consultative or observer status with IMO or ILO to record instances of unfair treatment of seafarers in the event of maritime accidents.

81. Discussions are ongoing as to whether there is need for a mandatory solution to regulate liability and compensation regarding claims for death, personal injury and abandonment of seafarers. The outcome of the ILO Labour Conference (maritime session) is relevant in deciding how to proceed regarding future work on abandonment. Despite the low number of cases of abandonment currently registered in the joint database on abandonment of seafarers, some are of the view that broad

conclusions could not be drawn since the maritime industry was currently in the midst of a very prosperous business cycle.[36]

B. International migration of people by sea

82. The high-level dialogue devoted to international migration and development of the sixty-first session of the General Assembly will provide a unique opportunity for the international community to set the foundation for enhanced international cooperation in addressing the multifaceted issues raised by the international movement of people. There were nearly 200 million international migrants in 2005.[37] An estimated 2.5 to 4 million people cross international borders without authorization each year.[38] No statistics are available on the total number of people who use the maritime route clandestinely. Only a very small number of States report incidents. During 2005, 247 incidents related to unsafe practices associated with the trafficking or transport of migrants by sea involving 17,513 migrants and 45 countries were reported to IMO.[39]

83. Those who use the maritime route to enter another country clandestinely may be migrants, asylum seekers, refugees or trafficked persons. They are all subject to different legal regimes and at times are referred to differently depending on the circumstances in which they find themselves. For example, if persons are hiding in a container on board a commercial vessel, they are referred to as stowaways. If they are found in distress at sea, they are persons who must be rescued. However, in all cases, States are required to comply with international human rights law and refugee law and the principle of non-refoulement.

84. One distinctly maritime issue that is raised by international migration is the rescue of persons in distress at sea. It is estimated that a large number of people die each year trying to cross land and sea borders without being detected by the authorities.[40] Many persons die at sea as a result, for example, of suffocating in a sealed container or drowning because the ship or craft they were on was unseaworthy or because they were thrown overboard. Others are lucky if they are rescued by a passing ship. Although there is an obligation under international law to rescue persons in distress at sea, this duty may not always be observed by flag States and the masters and crew that serve on board vessels flying their flag. The reluctance of some coastal States to permit the disembarkation of persons rescued at sea or the imposition of preconditions for disembarkation or penalties on shipping companies can undermine the integrity of the search and rescue regime. It can also undermine the protection needs of those asylum seekers and refugees who may be among those rescued and can result in refoulement.

85. For their part, coastal States have expressed concerns about security and the necessity to maintain effective border and immigration controls and to prevent and combat transnational organized crimes such as smuggling and trafficking. Seeking to defend their sovereignty and security, States have devoted enormous amounts of attention and resources to stem irregular migration, with limited success.[41]

86. The seriousness of the problems posed by the smuggling of migrants was underlined by all States at the second session of the Conference of the Parties to the United Nations Convention against Transnational Organized Crime (10-21 October 2005), which supported enhancing cooperation at the regional and global levels as an essential factor to curb the phenomenon. Many States emphasized the need to

address the problems not only from a law enforcement and security perspective, but also with due regard to humanitarian factors and the need to ensure the fundamental human rights and dignity of the smuggled migrants. Several speakers stressed that high priority should be accorded to addressing the root socio-economic causes, such as poverty, unemployment and underdevelopment, as well as the desire to seize economic opportunities elsewhere. The lack of financial, technical and human resources and, generally, the lack of necessary capacity to tackle the problem were identified by many as basic and major impediments to effective national action against the smuggling of migrants.[42]

87. At its third session, scheduled to be held from 9 to 18 October 2006, the Conference of the Parties will consider the legislative or other border measures States have adopted (a) to prevent and detect the smuggling of migrants; (b) to prevent commercial carriers from being used to smuggle migrants; and (c) to strengthen cooperation with the border control agencies of other States.[43]

88. The General Assembly, in paragraph 58 of its resolution 60/30, urges States that have not yet done so to become parties to the Protocol against the Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime, and the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime, and to take appropriate measures to ensure their effective implementation.

89. The General Assembly also calls upon States to cooperate to ensure that persons are rescued at sea and delivered to a place of safety and urges States to take all necessary measures to ensure the effective implementation of the amendments to the International Convention on Maritime Search and Rescue (SAR) and to the International Convention for the Safety of Life at Sea relating to the delivery of persons rescued at sea to a place of safety (SOLAS) upon their entry into force, as well as of the associated Guidelines on the Treatment of Persons Rescued at Sea. The amendments are scheduled to enter into force on 1 July 2006. They set out the responsibility of parties/contracting Governments to provide a place of safety, or to ensure that a place of safety is provided, under the coordination of the SAR region in which the persons were rescued. Following a decision taken by the Inter-agency meeting on the treatment of persons rescued at sea, an information brochure to assist the masters, shipowners, insurance companies, contracting States and other interested parties for the post-rescue phase is being finalized and is expected to be circulated this year (see also A/59/62/Add.1, paras. 75-79).

90. The increasing numbers of tragic accidents that have occurred during irregular migration in the Mediterranean Sea and elsewhere have demonstrated the importance of preserving the integrity of the SAR regime. Since asylum seekers and refugees are often among those rescued or intercepted at sea, the Office of the United Nations High Commissioner for Refugees organized an expert meeting in Athens in September 2005 to discuss relevant protection aspects in the context of irregular migratory movements in the Mediterranean region and to compile practical suggestions to be considered at a State representatives' meeting (23 and 24 May 2006).

IX. Maritime security

91. Today's challenges to maritime security increasingly comprise more non-traditional threats, such as terrorist acts against shipping, trafficking in weapons of mass destruction, piracy and armed robbery at sea, illicit traffic in narcotic drugs, psychotropic substances and nuclear substances, and smuggling of people and arms. However, depletion of natural resources, degradation of the marine environment, as well as natural disasters, are also directly relevant to the security agenda, since they can undermine the natural bases on which the livelihoods of millions of people depend and can have a negative impact on maritime trade, as well as such key industries as, inter alia, fishing and tourism. Most challenges to maritime security are global in scope, are often connected and have the potential to undermine human security. In the present section, information is provided on recent efforts by the international community to improve cooperation in preventing and combating the major threats to maritime security, as well as efforts to address specific threats such as terrorist acts against shipping, trafficking in weapons of mass destruction and piracy and armed robbery at sea. Recent efforts to strengthen flag State implementation and enforcement, which is of vital importance for maritime security, are reported on in section VII.C above.

92. The importance for collective security of effective cooperation among States, in accordance with international law, against transnational threats, was acknowledged by the General Assembly at the 2005 World Summit.[44] Moreover, in paragraph 50 of its resolution 60/30, the Assembly encourages States to cooperate to address threats to maritime safety and security, including piracy, armed robbery at sea, smuggling and terrorist acts against shipping, offshore installations and other maritime interests, through bilateral and multilateral instruments and mechanisms aimed at monitoring, preventing and responding to such threats.

93. Cooperation among States can take many forms, including the sharing of information or the undertaking of joint enforcement action. In addition to cooperation at all levels, what is required in order to prevent and combat the challenges to maritime security effectively is a comprehensive approach to security. A number of meetings have recently been convened at the regional level in pursuance of those objectives. For example, the Advisory Committee on Protection of the Sea (ACOPS) convened the First Conference of the Ocean Security Initiative in July 2005 to identify opportunities for furthering integrated approaches to security by bringing together stakeholders whose areas of expertise and interest do not normally converge, but whose cooperation and integration are essential to arrive at a comprehensive approach to security.[45] Likewise, the National Institute for the South China Sea Studies and the Hainan Maritime Safety Administration of China convened a symposium on maritime security in the South China Sea in December 2005.[46]

94. Indeed, countries that are dependent on maritime transport and the shipping industry have been particularly concerned about the impact that a threat to maritime security would have on international maritime transport. At the Ministerial Conference on International Transport Security in January 2006,[47] Ministers underlined the continuing high priority that must be given to addressing vulnerabilities in international maritime transport. They also invited IMO to undertake a study and to make recommendations, as necessary, to enhance the security of ships not already covered by SOLAS chapter XI-2 and the International

Ship and Port Facility Security (ISPS) Code (see A/60/63/Add.2, para. 48), in order to protect them from becoming targets of acts of terrorism, piracy or armed robbery at sea and to prevent them from being exploited or used as means for committing such acts.

95. The protection of shipping lanes of strategic importance and significance, especially the Straits of Malacca and Singapore, and the need to foster cooperation among the States bordering the Straits, user States and others with an interest in keeping the Straits open for navigation continued to be the focus of particular attention, including at two recent meetings in Indonesia. At the Batam meeting, the Ministers of Foreign Affairs of Indonesia, Malaysia and Singapore, in addition to the actions described in paragraph 70 above, acknowledged the need to address issues of maritime security comprehensively to include transboundary crimes such as piracy, armed robbery and terrorism. They decided to establish a Tripartite Technical Experts Group (TTEG) on Maritime Security. The Ministers reaffirmed that primary responsibility for the safety of navigation, environmental protection and maritime security lies with the littoral States. They also recognized the importance of engaging the States bordering the funnels leading to the Straits and the major users.[48] The Jakarta meeting, in addition to the actions described in paragraph 70 above, commended the efforts of the defence forces of the littoral States and Thailand in strengthening modalities for cooperation. It was agreed to promote, build upon and expand the cooperative and operational arrangements of the three littoral States, including the TTEG on Maritime Security and coordinated maritime patrols in the Straits through maritime security training programmes and other forms of cooperation, such as maritime exercises, with a view to further strengthening capacity-building in the littoral States to address security threats to shipping. IMO was invited to consider, in consultation with the littoral States, convening a series of follow-up meetings for littoral States to identify and prioritize their needs and for user States to identify possible assistance.[49]

A. Terrorist acts against shipping and trafficking in weapons of mass destruction

96. In paragraph 52 of its resolution 60/30, the General Assembly urges States to become parties to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention) and the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf (SUA Protocol), takes note of the adoption of the 2005 Protocols amending those instruments on 14 October 2005[50] and urges States parties to take appropriate measures to ensure the effective implementation of those instruments, through the adoption of legislation, where appropriate.

97. The 2005 Protocols have broadened the list of existing offences under the SUA Convention and its Protocol. The SUA Convention has been amended to include such offences as using a ship in a manner that causes death or serious injury or damage when the purpose of the act, by its nature or context, is to intimidate a population, or to compel a Government or an international organization to do or to abstain from any act and the transport of weapons of mass destruction or of weapons or equipment that could be used for weapons of mass destruction. However, there are circumstances when the transportation of nuclear materials is not considered an offence, for example, if such materials are transported to or from the territory of, or

under the control of, a State party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the resulting transfer or receipt is not contrary to such State party's obligations under NPT. Also included among the list of offences is the transport on board a ship of a person who has committed an offence under the Convention or an offence set forth in any of the conventions on terrorism listed in the annex. None of the offences will be considered political for the purposes of extradition.

98. The 2005 Protocol to the SUA Convention also introduces new comprehensive provisions for the boarding of ships by a State party other than the State party whose flag the vessel flies where there are reasonable grounds to suspect that the ship or a person on board the ship is, has been, or is about to be involved in the commission of an offence under the Convention. Boardings can only be undertaken with the express consent of the flag State. However, States parties have the option of notifying the Secretary-General that with respect to ships flying their flag or of their registry, the requesting Party is granted authorization to board and search the ship. A number of safeguards must be met when a State party takes measures against a ship, such as the requirement not to endanger the safety of life at sea, to ensure that all persons on board are treated in conformity with international law, including human rights law, to conduct a boarding and search in accordance with applicable international law, to advise the master of a ship of its intention to board and to afford him/her the opportunity to contact the ship's owner and the flag State at the earliest opportunity. The use of force is to be avoided and a provision modelled on existing international conventions has been added to that effect. A claims provision has also been included.

99. The amendments to the SUA Convention will enter into force 90 days after the date on which 12 States have either signed the 2005 Protocol without reservation as to ratification, acceptance or approval, or have deposited an instrument of ratification, acceptance, approval or accession with the Secretary-General. The amended SUA Protocol relating to fixed platforms requires ratification from three States that are also parties to the SUA Convention, and cannot enter into force unless the 2005 Protocol to the SUA Convention is already in force.

100. The 2005 Protocols complement the maritime security measures already adopted by IMO, including SOLAS chapter XI-2 (Special measures to enhance maritime security) and the ISPS Code, which entered into force in July 2004. In paragraph 53 of its resolution 60/30, the General Assembly calls upon States to effectively implement the ISPS Code and related amendments to SOLAS and to work with IMO to promote safe and secure shipping while ensuring freedom of navigation. IMO has been assisting States with the implementation of the maritime security measures through the delivery of regional and national training seminars/workshops under the Global Programme on Maritime and Port Security and the delivery of training courses under the "train-the-trainer" programme.[51]

101. The relationship between security and freedom of navigation has been discussed at IMO in the context of proposed amendments to SOLAS on long-range identification and tracking of ships and, in particular, in the context of determining the appropriate distance from the coast at which a coastal State would be entitled to receive long-range identification and tracking information from a ship that does not intend to enter a port facility or a place under its jurisdiction (see A/60/63/Add.2, paras. 46-47).[52]

B. Piracy and armed robbery against ships

102. During 2005, 264 acts of piracy and armed robbery against ships were reported to IMO to have occurred or to have been attempted, representing a decrease of 66 acts over the figure in 2004.[53] The areas most affected remained the same. The number of acts reported to have occurred or to have been attempted in the South China Sea decreased from 113 to 97, from 60 to 16 in the Malacca Strait, from 57 to 23 in West Africa and from 46 to 25 in South America and the Caribbean, but increased from 41 to 51 in the Indian Ocean and from 13 to 48 in East Africa. Two incidents took place in the Atlantic Ocean and two in the Pacific Ocean areas. While there has been an overall decrease in the number of acts reported to have occurred or to have been attempted, a matter of continuous concern to seafarers and the shipping industry is the level of violence used in the attacks and the possibility of being injured, killed or held hostage together with the vessel. Those dangers were highlighted at the International Labour Conference (Maritime session) in February 2006. According to the reports received by the International Maritime Bureau of the International Chamber of Commerce,[54] the number of hijacked ships increased to 23 in 2005, the highest since 2002, and the number of crew taken hostage increased to 440, compared with 148 in 2004. Hijacking has been particularly prevalent in waters off the coast of Somalia and has affected two ships, operated by the United Nations World Food Programme, carrying food aid to Somalia. One vessel was held for 100 days before being released.[55]

103. In its resolution A.979(24) on "Piracy and armed robbery against ships in waters off the coast of Somalia", the IMO Assembly condemns and deplores all acts of piracy and armed robbery against ships irrespective of where such acts occur or may occur and appeals to all parties, which may be able to assist, to take action, within the provisions of international law, to ensure that all acts or attempted acts of piracy and armed robbery against ships are terminated forthwith, any plans for committing such acts are abandoned and any hijacked ships are immediately and unconditionally released and that no harm is caused to the seafarers on board. The IMO Assembly further urges Governments to increase their efforts to prevent and suppress acts of piracy and armed robbery against ships and, in particular, to cooperate with other Governments and international organizations in relation to acts occurring or likely to occur in the waters off the coast of Somalia. It requests the Transitional Federal Government of Somalia to bring the resolution to the attention of: (a) the Transitional Federal Assembly, requesting it to initiate appropriate actions suitable to prevent and suppress acts of piracy and armed robbery against ships originating from within Somalia; and (b) to all other parties concerned in Somalia and to strongly urge them to immediately terminate all acts of piracy and armed robbery against ships sailing in waters off the coast of Somalia.

104. The Assembly authorized the Secretary-General of IMO to submit the resolution to the Secretary-General of the United Nations for consideration and any further action he might deem to be appropriate, including bringing the matter to the attention of the Security Council, taking into account regional coordination efforts. The Secretary-General of IMO was also requested to continue monitoring the situation and to report to the IMO Council on developments; to establish and maintain cooperation with the United Nations Monitoring Group on Somalia; and to consult with interested Governments and organizations to discuss the provision of technical assistance to Somalia and nearby coastal States to address the problem.

This includes taking into account the outcome of the subregional seminar on piracy and armed robbery against ships and maritime security held in Sana'a from 9 to 13 April 2005.

105. As in previous years, the General Assembly, in its resolution 60/30 again urges all States to combat piracy and armed robbery at sea, in cooperation with IMO, and to take the measures set out in paragraph 51 of the resolution. In paragraph 57, the Assembly welcomes the progress in regional cooperation in some geographical areas, through the Jakarta Statement on Enhancement of Safety, Security and Environmental Protection in the Straits of Malacca and Singapore, adopted on 8 September 2005, and the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia, adopted on 11 November 2004 in Tokyo (see A/60/63, para. 98), and urges States to give urgent attention to adopting, concluding and implementing cooperation agreements at the regional level in high-risk areas.

X. Ecosystem approaches and oceans

A. Introduction

106. In recent years, there has been increasing international recognition of the need to effectively manage human activities that have an effect on the marine environment and its ecosystems in order to promote the sustainable development of oceans and seas and their resources. The protection of marine ecosystems is essential for sustainable development. A number of ecosystem approaches have been developed to achieve this goal.

107. *Definitions*. There is no single internationally agreed definition of "ecosystem approach", which is interpreted differently in different contexts. The concept is generally associated with management based on the "best understanding of the ecological interactions and processes necessary to sustain ecosystem structure and function".[56] A number of related terms in use include an ecosystem-based approach, ecosystem management approach, integrated ecosystem management,[57] ecosystem considerations. The common denominator for all these wordings is that they all refer to a comprehensive, science-based approach to the conservation and management of natural resources.[58]

108. The first instrument to adopt an ecosystem approach to ocean management was the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). The objective of the Convention is the conservation of Antarctic marine living resources, which includes their "rational use" (art. 2). The CCAMLR ecosystem approach was an innovative development, setting the benchmark for later developments in the regime for the conservation of marine living resources[59] (see also para. 177 below).

109. The concept was then elaborated at the global policy level by the 1992 United Nations Conference on Environment and Development (UNCED), which built on the outcomes of the 1972 Stockholm Conference on the Human Environment. One of the outcomes of UNCED was the 1992 United Nations Convention on Biological Diversity (CBD), which describes the ecosystem approach as a strategy for the integrated management of land, water and living resources that promotes

conservation and sustainable use in an equitable way. This approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that human beings, with their cultural diversity, are an integral component of ecosystems (decision V/6, annex A) (see also paras. 154-157 below).

110. The First Joint Ministerial Meeting of the Helsinki Commission and the Commission for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) defined the ecosystem approach as "the comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity".[60]

111. In the fisheries sector, the "ecosystem approach to fisheries" was defined as the effort "to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries".[61]

112. In order to understand the meaning of "ecosystem approaches" it is important to understand the concept of "ecosystem". The term has also been defined in various ways, including in international legal instruments. Article 1 (3) of CCAMLR provides that: "the Antarctic marine ecosystem means the complex of relationships of Antarctic marine living resources with each other and with their physical environment". Article 2 of CBD defines an ecosystem as "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit".

113. The key features of an ecosystem can be summarized in five points: (a) an ecosystem exists in a space with boundaries that may or may not be explicitly delineated. Ecosystems are distinguishable from each other based on their biophysical attributes and their locations; (b) an ecosystem includes both living organisms and their abiotic environment, including pools of organic and inorganic materials; (c) the organisms interact with each other and interact with the physical environment through fluxes of energy, organic and inorganic materials among the pools; (d) an ecosystem is dynamic — its structure and function change with time; and (e) an ecosystem exhibits emergent properties that are characteristic of its type and that are invariant within the domain of existence.[62]

114. *Need for ecosystem approaches.* Ecosystems are essential for human well-being through their provisioning, regulating, cultural and supporting services.[63] The health of ecosystems is therefore not only essential to the environment, but also important to the existence and development of human society. As components of ecosystems, human beings and their interactions have profound effects on the structure and function of ecosystems, which, conversely, often have profound effects on human habitats, human health and even socio-economic development.[64]

115. In particular, marine ecosystems, which cover more than 70 per cent of the globe and support an abundant and diverse web of life, are extremely valuable for the health and development of our planet. At the same time, available evidence

indicates that marine ecosystems are under growing pressure from different types of human activities or stresses.[65]

116. Management systems to control and reduce the effects of these activities have conventionally been developed on a sectoral basis, resulting in a patchwork of legislation, policies, programmes and management plans at the local, national and international levels. These management systems have not prevented a deterioration of ecosystem health. Ecosystem approaches are based on the idea that more holistic, integrative and adaptive management approaches, based on scientific information, would maintain ecosystems in the sustainable condition necessary to achieve desired economic and social benefits.

117. In fact, the development of ecosystem approaches in the marine context builds on the concept of integrated management, already widely used for the management of marine and coastal areas. Integrated management involves comprehensive planning and regulation of human activities towards a complex set of interacting objectives and aims at minimizing user conflicts while ensuring long-term sustainability. It recognizes the need to protect the ecosystem taking into account the effects of multiple uses and acknowledges the limitations of the sectoral approaches and the linkages between inland, coastal and ocean uses. The ecosystem approach can be considered as an evolution of integrated management, with a greater emphasis on ecosystem implications.[66]

118. *Goal of the ecosystem approach*. The goal of the ecosystem approach is to restore and sustain the functions of ecosystems, based on their health, productivity and biological diversity, and the overall quality of life through management systems that are fully integrated with social and economic goals, for the benefit of current and future generations.[67] In relation to fisheries, the goal of the ecosystem approach to fisheries is to plan, develop and manage fisheries in a manner that addresses the multiplicity of societal needs and desires, without jeopardizing the options for future generations to benefit from a full range of goods and services provided by marine ecosystems.[68]

119. Since these have long been the goals of management of most human activities, moving to the ecosystem approach should be considered an evolutionary step, not a break with the past, which should be approached systematically and in a coordinated manner.[69]

B. Legal and policy framework at the global level

120. A number of international instruments, both binding and non-binding, include explicit or implicit references to the ecosystem approach.

1. Legally binding instruments

121. *The United Nations Convention on the Law of the Sea (UNCLOS)*. UNCLOS provides the legal framework for the implementation of an ecosystem approach to all activities conducted in marine areas. The preamble indicates that "the problems of ocean space are closely interrelated and need to be considered as a whole". The general principles concerning marine living resources require States to adopt conservation and management measures based on the best scientific evidence available and designed to maintain or restore harvested species at levels that can

produce maximum sustainable yield, as qualified by relevant environmental and economic factors. Such measures must take into account the interdependence of stocks, as well as their effects on the health of species associated with or dependent upon harvested species.[70] Basic principles on the protection and preservation of the marine environment require States to protect all areas of the oceans from all sources of degradation, as well as to adopt special measures for rare or fragile ecosystems and the habitats of depleted, threatened or endangered species and other forms of marine life.[71] Where international rules and standards are inadequate, special measures may be taken for vessels to protect natural resources in a clearly defined area of the exclusive economic zone recognized for its oceanographical and ecological conditions.[72] In addition, UNCLOS requires the International Seabed Authority to protect and conserve the natural resources of the Area as well as prevent any damage to the fauna and flora of the marine environment from mining activities conducted in the Area.[73]

122. *United Nations Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks*. The Agreement, which provides the legal regime for the conservation and management of straddling fish stocks and highly migratory fish stocks, requires States to apply the ecosystem approach and the precautionary approach when managing these fisheries, in addition to the principles, norms and rules for the conservation and utilization of marine living resources established in UNCLOS. Its preamble emphasizes the need for States parties to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations. The Agreement requires parties to: (a) assess the impacts of fishing, other human activities and environmental factors on target stocks and species associated or belonging to the same ecosystem; (b) adopt conservation and management measures for such species; (c) minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species and impacts on endangered species, through development and use of selective, environmentally safe and cost-effective fishing gear and techniques and; (d) protect biodiversity in the marine environment.[74] Parties must also ensure the compatibility of conservation and management measures for straddling fish stocks and highly migratory fish stocks across legal boundaries and throughout the distribution range of the fishery resources.[75]

123. *Convention on Biological Diversity*. CBD is the first international treaty to take a holistic, ecosystem-based approach to biodiversity conservation and sustainable use. The Convention adopts a multi-species approach to the conservation and management of biological resources and the environment, which differs from the traditional, single-species approach. Two of the three of the objectives of the Convention are related to ecosystem protection, the conservation of biological diversity and the sustainable use of its components (article 1). The general measures established under the Convention include in situ and ex situ conservation measures, which specifically refer to the protection and restoration of ecosystems (see article 8 (d), (f) and (h) and article 9). The ecosystem approach is the primary framework for action under the Convention. The Conference of the Parties, at its fifth meeting, endorsed the description of the ecosystem approach and operational guidance and recommended the application of the principles and other guidance on the ecosystem

approach (decision V/6). The seventh meeting of the Conference of the Parties agreed that the priority should currently be on facilitating implementation of the ecosystem approach and welcomed additional guidelines to that effect (decision VII/11). The Jakarta Mandate on Marine and Coastal Biodiversity strongly recommends that ecosystem management approaches be widely adopted in various aspects of the above-mentioned areas (see para. 157 below).

124. *Ramsar Convention.* The Ramsar Convention provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. It applies to areas of marine water the depth of which at low tide does not exceed 6 metres (art. 1). The goal of the Convention is to promote the conservation and the wise use of wetlands (art. 3). The concept of wise use is described in the context of the Convention as the sustainable utilization for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem.[76]

2. Non-binding instruments and arrangements

125. *United Nations Conference on the Human Environment.* The United Nations Conference on the Human Environment met in Stockholm in 1972.[77] In the Stockholm Declaration, States stress both the right of humankind to modify the environment for its development and the dangers behind the huge capacity developed to do so. Several principles set out the basis for the preservation and enhancement of the human environment, including: the need to protect species diversity and marine life, based on the idea that natural resources, "especially representative samples of natural ecosystems", which must be preserved for the benefit of present and future generations through careful planning or management (Principle 2); humankind's special responsibility to safeguard, manage and plan for wildlife (Principle 4); the responsibility of States to take all possible steps to prevent pollution that might "harm living resources and marine life" in the seas (Principle 7); and the responsibility of States not to "cause damage to the environment of other States or of areas beyond the limits of national jurisdiction" (Principle 21). These principles have inspired subsequent environmental policies and legal developments.

126. *World Charter for Nature, 1982.*[78] In the wake of the Stockholm Declaration, in 1982 the General Assembly of the United Nations adopted the World Charter for Nature, which similarly sets forth a series of principles for wise management and conservation of the environment, emphasizing the need for laws to recognize and accommodate the laws of nature. In particular, the document underlines the need to protect genetic viability on Earth, as well as the need to safeguard habitats (General Principle 2). Likewise, it recognizes that unique areas and representative samples of all different types of ecosystems and habitats of rare or endangered species must be given special protection (General Principle 3).

127. *United Nations Conference on Environment and Development, 1992.*[79] In the Rio Declaration on Environment and Development adopted by UNCED, States recognized the ecosystem approach as the backbone of sustainable development. They considered that in order to achieve sustainable development, environmental protection must constitute an integral part of the development process and could not be considered in isolation from it (Principle 4). States should therefore cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem (Principle 7). UNCED adopted Agenda 21 as its plan of

action. The preamble to Agenda 21 points out that "the continuing deterioration of the ecosystems" is one of the major issues with which humanity is confronted, and "better protected and managed ecosystems" cannot be achieved without the integration of environment and development as well as international cooperation. Chapter 17 on oceans and seas and their living resources contains a number of provisions relating to the ecosystem approach. It demands "new approaches to marine and coastal area management and development, at the national, subregional, regional and global levels, approaches that are integrated in content and are precautionary and anticipatory in ambit" (para. 1). These principles, as well as the relevant programme areas, promote an ecosystem approach to ocean management. In particular, coastal States are required to promote integrated management and sustainable development of coastal areas and the marine environment under their national jurisdiction. As regards living resources, emphasis is placed on multi-species management and other approaches that take into account the relationships among species, including the need to protect and restore endangered marine species and preserve rare or fragile ecosystems, as well as habitats and other ecologically sensitive areas. Furthermore, chapter 17 calls on States to identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and to provide necessary limitations on use of these areas, through, inter alia, designation of protected areas (para. 86).

128. *Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)*. GPA was adopted in 1995 in order to prevent the degradation of the marine environment from land-based activities by assisting States in taking actions individually or jointly within their respective policies, priorities and resources, which will lead to the prevention, reduction, control and/or elimination of the degradation of the marine environment, as well as to its recovery from the impacts of land-based activities. The basis for action of the Programme is that the sustainable use of the oceans depends on the maintenance of ecosystem health, public health, food security and economic and social benefits, including cultural values. Its main objective is the development of comprehensive, continuing and adaptive programmes of action within the framework of integrated coastal area management. The development and implementation of national programmes of action should focus on sustainable, pragmatic and integrated environmental management approaches and processes, such as integrated coastal area management, harmonized, as appropriate, with river basin management and land-use plans.[80]

129. *FAO Code of Conduct for Responsible Fisheries, 1995*. The Code "sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity".[81] It recommends that conservation and management decisions take into account traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors, and that scientific research investigate the interaction of fisheries with the ecosystem. Application of the precautionary approach should apply to the conservation of target species, associated or dependent species and non-target species and their environment, and selective and environmentally safe fishing gear and practices should be developed and used to maintain biodiversity and conserve the population structure and aquatic ecosystems. All critical fisheries habitats in marine ecosystems should be protected and rehabilitated.[82]

130. *Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, 2001*. The Declaration recognizes that sustainable fisheries management incorporating ecosystem considerations entails taking into account the impacts of fisheries on the marine ecosystem and the impacts of the marine ecosystem on fisheries. It confirms that the objective of including ecosystem considerations in fisheries management is to contribute to long-term food security and to human development and to assure the effective conservation and sustainable use of the ecosystem and its resources, through increased attention to interactions, such as predator-prey relationships among different stocks and species, and an understanding of the impact of human activities on the ecosystem, including the structural distortions they can cause. Consequently, the Declaration recommends advancing the scientific basis for developing and implementing management strategies that incorporate ecosystem considerations, building on existing and future available scientific knowledge.[83]

131. *International Coral Reef Initiative*. The Initiative was established in 1995 as a partnership among Governments, international organizations, and non-governmental organizations to preserve coral reefs and related ecosystems, by implementing chapter 17 of Agenda 21 and other relevant international conventions and agreements. It encourages Governments to develop and adopt integrated coastal management measures by promoting the protection of the marine environment from land-based and ocean-based sources of pollution, environmentally sound practices, including zoning, where appropriate, as well as measures to prevent illegal fishing practices, achieve sustainable fisheries and protect the ecological systems that support them.[84]

132. *Johannesburg Plan of Implementation of the World Summit on Sustainable Development*.[85] The 2002 World Summit on Sustainable Development, in assessing progress in the implementation of UNCED Agenda 21, reaffirmed that the objective of international cooperation is to promote the integration at the local, national, regional and global levels of the interdependent and mutually reinforcing pillars of sustainable development: economic development, social development and environmental protection. To this end, the Johannesburg Plan of Implementation encourages the application by 2010 of the ecosystem approach as well as the promotion of integrated, multisectoral coastal and ocean management at the national level, including assistance to coastal States in developing ocean policies and mechanisms on integrated coastal management.

133. *United Nations Millennium Declaration and 2005 World Summit*. In the Millennium Declaration (see resolution 55/2), the General Assembly reaffirms its support for the principles of sustainable development, including those set out in Agenda 21, agreed upon at UNCED. It agrees to adopt in its environmental actions a new ethic of conservation and stewardship and to press for the full implementation of CBD (paras. 22-23). In the 2005 World Summit Outcome (resolution 60/1), the General Assembly agrees to improve cooperation and coordination at all levels in order to address issues related to oceans and seas in an integrated manner and promote integrated management and sustainable development of the oceans and seas (para. 56 (l)).

3. Other relevant instruments

134. Besides the foregoing instruments, a number of other global instruments also provide measures for the management of oceans ecosystems. These include the 1972 Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention, 1972) and its 1996 Protocol; the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78); the 1973 Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the 1979 Bonn Convention on Migratory Species (CMS); the 1992 United Nations Framework Convention on Climate Change and the 1997 Kyoto Protocol; the 2001 Stockholm Convention on Persistent Organic Pollutants; and the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments.[86] The IMO Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs) are also relevant in this context.

C. Elements of an ecosystem approach

1. Developing an ecosystem approach[87]

135. The ultimate goal of an ecosystem approach is to promote sustainable development. The application of an ecosystem approach to oceans involves the maintenance of ecosystem integrity, functioning and health in order to ensure the sustainable use of ocean resources for present and future generations. Ecologically, "ecosystem health" refers to an ecosystem that retains its structure, activity and resilience over time; in other words, it is sustainable. Insofar as they use and affect the oceans, human beings are an inherent part of marine ecosystems. This means that ecosystem health and functioning also refers to the ability of the ecosystem to contribute to human welfare through the provision of living marine resources, ecosystem services and aesthetic and spiritual benefits. An assessment of the value of maintaining and restoring healthy ecosystems should therefore encompass social, economic, environmental and political concerns. A healthy ecosystem "could be described as one where the environment is viable; the economy is equitable, sustainable, and adequately prosperous; and the community is liveable and convivial".[88]

136. The distinguishing feature of the ecosystem approach is that it is integrated and holistic, taking account of all the components of an ecosystem, both physical and biological, of their interaction and of all activities that could affect them. All human activities that could affect the oceans should be managed in a comprehensive and integrated manner, on the basis of a scientific assessment of the state of the ecosystem, the interaction of its components and the pressures upon it.

137. Historically, the various components of an ecosystem, the activities and uses that might affect it and the adverse impacts upon it were all addressed separately and sectorally, by different local and national authorities. The ecosystem approach requires that the components of an ecosystem, the phenomena and activities that affect it and the legislative and policy frameworks be coordinated in a systematic manner to address interactions and cumulative effects. This may require the creation of new institutional frameworks, as well as appropriate coordination and collaboration among managers of the various sectors involved, and perhaps new policy and legislative instruments. States that are already implementing integrated

coastal zone management may use this as a platform upon which to build an ecosystem approach to management, which would involve an extension of scope further out to sea and a change of focus towards the science-based preservation of ecosystem components, interaction and functioning.

138. The ecosystem approach is science-based. However, scientific understanding of ocean ecosystems is still very limited, thus the application of the precautionary approach in the face of uncertainty is essential. Monitoring the state of the ecosystem over time to evaluate the effects of both natural changes and management measures is also necessary. Application of the ecosystem approach is necessarily dependent on the composition and functioning of individual ecosystems and the pressures upon them, which are specific to different geographic areas; however, an examination of policies adopted by Governments reveals certain common elements in the development and implementation of an ecosystem approach. Very generally, the application of such an approach includes the following steps.

(a) Identification of the geographical scope for the application of the ecosystem approach

139. The first step in the development of an ecosystem approach is to identify the area in which it will be applied. The ecosystem approach may be applied at a number of geographic scales, depending on geophysical characteristics, the location of human activities (socio-economic factors), the relevant jurisdictional scope of governmental institutions and, especially, the problems or issues being addressed. Ecosystem boundaries are typically based on biogeographic and oceanographic characteristics among sea areas within the jurisdiction of the State concerned, taking into account the existing political, social and economic divisions in a way that reduces conflicts and inconsistencies in the management process. As various authorities in Governments may have different competencies, all the administrations might have to be involved, especially if the ecosystem concerned is affected by factors outside its limits. In areas where the biogeographic ecosystem crosses international boundaries, it would be advantageous for States to pursue bilateral or regional cooperation. The geographic span of management should reflect ecological characteristics and should encompass both the marine and the terrestrial components of the coastal zone. Factors to take into account include: (a) biogeographic characteristics, such as the composition of faunal communities and patterns of primary production; (b) physical oceanographic characteristics, such as depths, basin morphology, tidal and ocean currents, temperature, or degree of seasonal stratification; (c) links between the marine and terrestrial environment, including patterns of land use and distribution and density of human populations; and (d) human activities, including fisheries, mineral extraction and shipping.

(b) Scientific research and analysis of the components of the ecosystem, their interaction and functioning

140. Scientific research and analysis of the composition and functioning of the ecosystem are necessary for an initial description of the ecosystem, as a basis for the assessment of its condition and for identifying ecological and operational objectives, ecological indicators and reference points. The description of the ecosystem will involve an analysis of ecosystem structure (inter alia, species and size compositions, spatial distributions, population trends, keystone species) and functioning (inter alia, productivity, predator-prey relationships and energy flows), biodiversity features

and species supporting economic activities and industries such as fishing and ecotourism. Since current scientific understanding of ecosystems is limited, continued scientific research will be necessary. Governments should support continued scientific research to improve understanding of marine ecosystems to ensure that they are given appropriate protection within the context of sustainable development. Furthermore, human resources should be developed to ensure a better understanding of marine science and technology and how they apply to ecosystem approaches, since the linkages between science, management and policymaking are often difficult to comprehend. As the science will almost always be incomplete, managers will have to make use of the best available science and apply the precautionary approach when developing measures for conservation and sustainable use.

(c) Assessment of the condition of the ecosystem

141. Assessment of the status or condition of the ecosystem is a science-based activity, using the best information and practice available. It involves an evaluation of environmental quality, including the presence of contaminants, nutrients, acidification, physical destruction of habitats, status of fish stocks, presence of alien species, loss of biodiversity and cascading effects of changes in the ecosystem, whether natural or human-induced. New assessments should be conducted periodically to reflect possible changes in the ecosystem, both beneficial and detrimental.

(d) Establishment of ecological and operational objectives to maintain biodiversity, productivity, water quality and habitat quality in a given ecological region

142. Based on the analysis of the components of the ecosystem, their interaction, functioning and status, managers should set ecological and operational objectives that clearly specify the state of the ecosystem to be achieved, including the position and activities of humans within it and reflecting the values and wishes of a majority of stakeholders. Good objectives relate to measurable properties of ecosystems and human societies, so that indicators and reference points can be developed to measure progress towards the objective. The process for identifying objectives must be inclusive and consultative. Objectives in different areas will reflect different ecological, social and economic properties, the available scientific knowledge, human activities in the areas and pressures on the ecosystem, as well as human and institutional capacities.

(e) Identification of pressures and impacts on the ecosystems

143. In conjunction with an analysis of ecosystem functioning, an assessment of its status, and the determination of ecosystem objectives as the desired state to be achieved, the ecosystem approach involves the identification of pressures and impacts on the ecosystem. These can include pollution by hazardous substances from a variety of sources, microbiological pollution, eutrophication caused by excessive inputs of nutrients, marine debris, anthropogenic underwater noise, invasive alien species, loss of biodiversity, physical destruction of habitats and the alteration of ecosystem structure and functioning by a variety of factors, some natural and some human-induced, including climate change, El Niño, hurricanes, earthquakes and tsunamis.

(f) Selection of ecological indicators to ensure that ecological objectives are being met

144. Indicators, limits and targets are required to monitor progress towards meeting operational objectives and to guide management decision-making. Indicators may describe ecosystem status, activity-specific ecosystem properties or impacts. Indicators should be measurable using existing instruments, monitoring programmes and analytical tools available in the area and on time-scales needed to support management measures and decision-making. They should reflect features of ecosystems and human impacts that are relevant to the achievement of operational objectives. Moreover, they should be concrete, cost-effective and easily understood by stakeholders. Lastly, indicators should be responsive to effective management action and provide rapid and reliable feedback on the consequences of management actions.

(g) Analysis of existing legal framework and identification of gaps, overlaps and inconsistencies

145. National legislation should be analysed to ensure that it supports and facilitates the application of an ecosystem approach. Where inconsistencies exist, they should be eliminated and where a supportive legal framework is lacking, one should be developed. An effective administration is also necessary. Some countries have found it useful to develop a national oceans policy as a framework to implement the ecosystem approach. Developing countries may require assistance in building the institutional capacity, in drafting appropriate legislation and in developing the human resources necessary to apply an ecosystem approach.

(h) Management of human activities that affect or might affect the ecosystem

146. The ecosystem approach requires that human activities that affect or might affect the ecosystem be identified and managed in an integrated manner that takes account of synergistic and cumulative effects on the physical and biological components of the ecosystem and their interaction. Most of these activities will already be managed sectorally, without taking into account their effects on the ecosystem either individually or collectively. Under the ecosystem approach, managers take into account the potential effect(s) of the activity on the ecosystem in their management plans and measures, with a view to protecting the ecosystem by reducing, controlling or even eliminating deleterious effects.

147. Activities that should be managed include: land-based industries using or producing hazardous substances, either on the coast or on rivers flowing towards the oceans; agricultural run-off that could result in eutrophication; coastal developments, industrial, residential or touristic; port construction and operation; construction and placement of installations and structures on the seabed; extraction of marine aggregates, such as sand and gravel; dredging of harbours and channels and disposal; offshore oil and gas exploration and production; seabed mining; waste disposal; scientific research; carbon sequestration; maritime transport activities; tourism; the laying of pipelines and cables; capture fisheries, aquaculture and shellfish harvesting. At the outset, these activities should be subject to environmental impact assessments to determine their effects on marine ecosystems and to enable mitigation measures to be taken.

148. Managers in different sectors should coordinate their measures to ensure that they are compatible and mutually reinforcing in the protection of marine ecosystems. In addition, they should recognize the potential significance of cumulative impacts in all decisions and actions and consider both direct and indirect impacts. The complexities of the ecosystem approach require that management should be better integrated across agencies, economic sectors and levels of Government. The selection of the appropriate scale and area for the application of the ecosystem approach should facilitate the effective coordination of measures taken by diverse agencies.

(i) Monitoring of natural changes in ecosystems and the effects of management measures through ecological indicators

149. Continuing monitoring programmes are essential to check the status of the ecosystem over time and in response to natural changes as well as management measures. Progress on the achievement of individual objectives should be evaluated regularly, through ecological indicators. In addition, a thorough reassessment of the complete ecosystem structure and functioning and status should be conducted periodically, especially in response to new scientific understanding, changes in human activities, increased pressure on the ecosystem and new management tools. Only by comparing the changes in ecosystem status and human activities over time and in relation to the overall goals and objectives is it possible to determine whether the ecosystem approach has been implemented successfully.

(j) Adjustment of the management system, if necessary

150. The ecosystem approach requires that management systems and tools be adaptive, taking into account and responding to changing circumstances. Because marine ecosystems are dynamic, management should take account of this natural variability as well as changes in human activities and the effects of management measures already implemented. Hence, managers should use the results of monitoring and periodic reassessments to adapt and update their strategies and measures to the changing situation in the ecosystem. Because scientific understanding of marine ecosystems is incomplete and because in any event the ecosystem will change over time, continuous investigation of ecosystem functioning and status will be required. Managers should be ready to respond to improvements of scientific understanding of the ecosystems concerned and should apply the precautionary approach in the face of uncertainties.

(k) Management structures

151. The application of an ecosystem approach requires transparency, awareness-raising among the public and the involvement of all stakeholders. It is important to make clear to stakeholders the economic and social benefits of the ecosystem approach and the need to preserve ecosystem functioning in order to maintain the supply of natural resources and ecological services upon which the local communities and the country as a whole depend. It should be stressed that the goal is to promote and sustain economic development and human well-being, and economic incentives should be offered to implement the ecosystem approach.

152. Until very recently, in most cases, the management of activities on or in the oceans or affecting them has taken a sectoral approach, whether nationally,

regionally or internationally. Appropriate mechanisms for horizontal integration among different levels of Government and vertical integration among agencies with different mandates are essential for the application of an ecosystem approach. In recent years, many States and regions have begun to develop integrated oceans policies and plans that include the application of an ecosystem approach. While some have created new institutions, others have facilitated cooperation among government departments through inter-ministerial committees or other cooperative structures. When ecosystems cross international boundaries, cooperation among the States concerned will be necessary. These issues are addressed in section D below.

2. Development of the ecosystem approach by international forums

153. CBD and FAO have contributed in their respective areas of competence to the clarification, development and application of the concept of an ecosystem approach.

154. *Ecosystem approach as developed by the Convention on Biological Diversity*. On the basis of the recommendations of a Workshop on the Ecosystem Approach (Lilongwe, 26 to 28 January 1998), CBD describes the ecosystem approach as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (COP decision V/6). The ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. Management must be adaptive in order to be able to respond to such uncertainties and contain elements of "learning-by-doing" or research feedback. Measures may need to be taken even when some cause and effect relationships are not yet fully established scientifically. The ecosystem approach does not preclude other management and conservation approaches, including biosphere reserves, protected areas and single-species conservation programmes, under existing national policy and legislative frameworks, but could, rather, integrate all these approaches and other methodologies to deal with complex situations. There is no single way to implement the ecosystem approach, as it depends on local, provincial, national, regional or global conditions. Indeed, there are many ways in which ecosystem approaches may be used as the framework for delivering the objectives of the Convention in practice.[80] Decision V/6 identifies a number of principles of the ecosystem approach, as well as operational guidance for its application. COP-7 refined and elaborated the ecosystem approach, based on an assessment of experience of parties in its implementation. It adopted further guidance to facilitate implementation (decision VII/11, annexes I and II).

155. Recognizing that sectoral approaches to marine and coastal conservation and sustainable use have generally not resulted in sustainable development, CBD recommends that the present monospecies approach to modelling and assessment should be augmented by an ecosystem process-oriented approach, based on research of ecosystem processes and functions, with an emphasis on identifying ecologically critical processes that consider the spatial dimension of these processes. Models of ecosystem processes should be developed through transdisciplinary scientific groups

(ecologists, oceanographers, economists and fisheries experts) and be applied in the development of sustainable land and coastal resource use practices (decision II/10).

156. Finally, the CBD programme of work on marine and coastal biological diversity (established by decision IV/5 and reviewed by decision VII/5), in addition to adopting the ecosystem approach as one of the guiding principles for the implementation of any activity pertaining to it, contains a specific operational objective aimed at promoting ecosystem approaches to the sustainable use of marine and coastal living resources, including the identification of key variables or interactions, for the purpose of assessing and monitoring (a) components of biological diversity, (b) the sustainable use of such components and (c) ecosystem effects.

157. The Jakarta Mandate also encourages the use of Integrated Marine and Coastal Area Management (IMCAM) as the most suitable framework for addressing the impact of human activities on marine and coastal biological diversity and for promoting its conservation and sustainable use. IMCAM is a management strategy to be applied in the context of the ecosystem approach. In this context, it encourages parties to establish and/or strengthen, where appropriate, institutional, administrative, and legislative arrangements for the development of integrated management of marine and coastal ecosystems, plans and strategies for marine and coastal areas and their integration within national development plans. Owing to its importance, the implementation of IMCAM became one of the elements of the Convention's programme of work on marine and coastal biological diversity, adopted in 1998 (decision IV/5) and updated in 2003 (decision VII/5).

158. *Ecosystem approach as developed by FAO*. The term "ecosystem approach to fisheries" was adopted by the FAO Technical Consultation on Ecosystem-based fisheries management, held in Reykjavik from 16 to 19 September 2002, following a recommendation in the 2001 Reykjavik Declaration to develop technical guidelines for best practices in introducing ecosystem considerations into fisheries management. The term was preferred by the Consultation over "ecosystem-based fisheries management" as, first, the latter seems to imply that the ecosystem would be the new foundation of fisheries management. This may have been interpreted as giving environmental considerations pre-eminence over socio-economic and cultural ones, raising concern about equity as well as political and socio-economic costs and feasibility. Secondly, the term "ecosystem approach" presents a convenient parallel with its sister concept "precautionary approach". Thirdly, the term "ecosystem approach to fisheries", not being limited narrowly to management, could cover other areas, such as development, planning, food safety and special requirements of developing countries, which are all covered by the Code of Conduct for Responsible Fisheries.[90]

159. The ecosystem approach to fisheries strives to balance diverse societal objectives by taking into account knowledge and uncertainties of biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries. Its purpose is to plan, develop and manage fisheries in a manner that addresses the multiple needs and desires of societies, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by marine ecosystems. It is neither inconsistent with, nor a replacement for, current fisheries management

approaches and is likely to be adopted as an incremental extension of current fisheries management approaches.[91]

160. The ecosystem approach to fisheries should respect the following principles: (a) fisheries should be managed to limit their impact on the ecosystem to the extent possible; (b) ecological relationships between harvested, dependent and associated species should be maintained; (c) management measures should be compatible across the entire distribution of the resource (across jurisdictions and management plans); (d) the precautionary approach should be applied because the knowledge about ecosystems is incomplete; and (e) governance should ensure both human and ecosystem well-being and equity.[92]

161. In 2005, FAO developed a general framework for the "ecosystem approach to aquaculture", including the "ecosystem approach to mariculture". FAO ecosystem approach to mariculture activities in 2005 included the convening of a meeting of experts for the re-establishment of the Environmental Aquaculture Network for the Mediterranean that incorporates an ecosystem management approach to finfish aquaculture and publication of a report on capture-based aquaculture and a technical paper on marine ranching.

162. In addition, FAO has engaged in the following activities aimed at implementing the ecosystem approach to fisheries: (a) assistance to countries of the Lesser Antilles through the Lesser Antilles Pelagic Ecosystem project; (b) cooperation with the United Nations Office for Project Services and the Global Environment Facility Benguela Current Large Marine Ecosystem project; (c) cooperation with the Global Environment Facility for the Bay of Bengal and Canary Current Large Marine Ecosystem projects; (d) implementation of a project on "Capacity-building for an Ecosystem Approach: Considering Interactions, including with Marine Mammals", with case studies to be conducted in Papua New Guinea, southern Brazil, and in countries members of the Southwest Indian Ocean Fisheries Commission; and (e) technical projects and workshops on fisheries co-management focusing on small-scale fishing communities in developing countries.

163. Other follow-up activities by FAO relevant to the ecosystem approach to fisheries are the development of technical guidelines on the design, implementation and testing of marine protected areas in fisheries, in cooperation with relevant organizations and conventions such as CBD, the World Bank and the International Union for the Conservation of Nature and Natural Resources (IUCN), and the development of international guidelines for ecolabelling of fish and fishery products from marine capture fisheries approved by the Committee on Fisheries in 2005. In addition, implementation of projects, such as the "Study on Interactions between Marine Turtles and Fisheries within an Ecosystem Context", the Global Environment Facility-funded project on reduction of environmental impact from tropical shrimp-trawling through the introduction of by-catch reduction technologies and change of management, and ongoing cooperation with the Convention on International Trade in Endangered Species of Wild Fauna and Flora, on the application of that Convention to commercially exploited aquatic species, are all directly relevant to the ecosystem approach to fisheries. Furthermore, FAO plans to organize in 2006 a workshop on economic, social and institutional considerations of applying the ecosystem approach to fisheries management.

D. Implementation of ecosystem approaches

1. Implementation at the regional level

164. In areas where ecosystems cross international boundaries, the ecosystem approach calls for transboundary cooperation. In many areas, regional seas programmes and action plans provide a platform for this collaboration, while in other areas, large marine ecosystem projects serve as the framework for the application of the ecosystem approach. Many regional organizations have already incorporated an ecosystem approach into their work programmes, while others are considering doing so.[93] Where such an approach has not been adopted, some regions have implemented integrated coastal zone management[94] or projects to protect fragile or vulnerable ecosystems by regulating human activities. In the present section, activities in the regional seas are first present, followed by developments in other regional forums in alphabetical order.

165. *The UNEP Regional Seas Programme*. The Programme provides a comprehensive institutional framework for regional and global cooperation on issues pertaining to the coasts, oceans and seas in 18 regions of the world[95] (see A/59/62/Add.1, paras. 279-281 and A/60/63/Add.1, paras. 242-244). The Regional Seas Strategic Directions for 2004-2007, as agreed at the sixth Global Meeting of the Regional Seas Conventions and Action Plans, held in 2004, called on all the regions to develop and promote a common vision and integrated management, based on ecosystem approaches, of priorities and concerns related to the coastal and marine environment and its resources in Regional Seas Conventions and Action Plans, introducing, among others proactive, creative and innovative partnerships and networks and effective communication strategies. Some follow-up activities include a report compiling estimates of the direct output value of goods and services for each of the relevant marine sectors of countries bordering the world's large marine ecosystems and regional seas;[96] the work of FAO and UNEP to encourage cooperation between regional seas programmes and regional fisheries bodies in the use of ecosystem approaches in managing abandoned/lost fishing gear as a part of the broader problem of marine litter on associated ecosystems; a project to analyse the current status of network development of Marine and Coastal Protected Areas at the regional level, together with CBD, the International Coral Reef Action Network and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization, to identify gaps and make recommendations for improving Marine and Coastal Protected Area networks; and the adoption of the large marine ecosystems assessment and management approach, using large marine ecosystems as operational units for concrete action.

166. *The Baltic Marine Environment Protection Commission (HELCOM)*. In 2003, HELCOM established a project for the development of Ecological Quality Objectives (EcoQOs). EcoQOs, together with associated indicators and target levels of these indicators are the central tool used to achieve a healthy ecosystem and in implementing the ecosystem approach. The EcoQO project, closely linked with its monitoring and assessment programmes, has developed an initial set of EcoQOs within the four priority areas of eutrophication, hazardous substances, fisheries and loss of habitats and biodiversity.[97] In 2004, HELCOM established a project to evaluate the implementation and ecological coherence of the network of Baltic Sea Protected Areas.[98]

167. *Baltic Sea Regional Project (BSRP)*. BSRP, which has been a Global Environment Facility-large marine ecosystem project since 2003, aims to implement an ecosystem approach in the Baltic large marine ecosystem, linking activities inland, along the coast and out in the open sea. The project is managed by HELCOM in cooperation with other organizations[99] and has two overall components: marine activities and coastal zone management activities. Under the marine component, activities of several laboratories are joined to contribute to specific areas of environmental management which concern the health of the ecosystem, productivity, fish, data management and socio-economic assessment. The work of HELCOM groups on environmental impacts of fisheries, invasive species, and development of a Baltic Sea Geographic Information System, ecological objectives and monitoring and modelling activities into BSRP is being integrated. Under coastal zone management activities, monitoring is conducted both on land and in coastal areas to develop a comprehensive picture about nutrient loads from the land and their effects in the sea. Certain coastal zone demonstration sites have been selected and established based on the valuable biological diversity of these areas.[100]

168. *Commission for the Protection of the Marine Environment of the North-east Atlantic (OSPAR)*. The OSPAR Biological Diversity and Ecosystems Strategy, adopted in 2003, is concerned with all human activities which can have an adverse effect on the protection and conservation of the ecosystems and the biological diversity of the North-east Atlantic (see A/59/62/Add.1, paras. 281-283). The strategy has four elements. First, ecological quality objectives are being developed and implemented. A pilot project on ecological quality objectives for the North Sea has commenced. Secondly, species and habitats that are threatened or in decline are being assessed, and management measures for the protection of species and habitats are being developed. Thirdly, an ecologically coherent network of marine protected areas is being created. Lastly, assessments of human activities that may adversely affect the OSPAR maritime area are being undertaken in general, as well as for specific issues such as: dumping wastes and dredged material at sea; dumping chemical weapons and munitions; marine litter; sand and gravel extraction; underwater noise; oil and gas activities; placement of installations, structures and cables; tourism; fisheries; mariculture; invasive species and ballast water; spatial planning; shipping; and carbon dioxide placement.[101]

169. In 2003, HELCOM and OSPAR outlined their common vision of an ecosystem approach to the management of human activities impacting on the marine environment in their areas.[102] They agreed to focus on four elements in particular: (a) promoting understanding and acceptance by all stakeholders of the ecosystem approach to the management of human activities and collaboration among the various management authorities in implementing that approach; (b) monitoring the ecosystems of the marine environment in order to understand and assess the interactions between and among different species and populations of biota, the non-living environment and humans; (c) setting objectives for environmental quality, to support both the formulation of policy and assessments; and (d) assessing the impact of human activities upon biota and humans, both directly and indirectly through impacts on the non-living environment, together with the effects on the non-living environment itself.[103] Furthermore, a joint work programme on the creation of a network of marine protected areas was adopted.[104]

170. *Antarctic Treaty system*. The Antarctic continent and the Southern Ocean are administered under the Antarctic Treaty system, which is a complex of agreements and arrangements among States (see A/59/62/Add.1, paras. 284-286). A key component of the Antarctic Treaty system is CCAMLR, the first international body to adopt an ecosystem approach to management. Formal monitoring of human impacts is required under the Protocol on Environmental Protection under the Antarctic Treaty,[105] which aims to protect the Antarctic environment and dependent and associated ecosystems by declaring general environmental principles and requiring implementation of several annexes, covering, inter alia, environmental impact assessments, conservation of Antarctic flora and fauna, waste disposal and management, prevention of marine pollution and area protection and management.

171. *Arctic Council*. Implementation of an ecosystem approach in the Arctic region is addressed by the Arctic Council.[106] The Council has established several working groups, including for the Arctic Monitoring and Assessment Programme (AMAP), the Protection of the Arctic Marine Environment (PAME) and the Conservation of Arctic Flora and Fauna (CAFF). AMAP has conducted two major assessments of the pollution in the Arctic. The 2002 report outlines the sources, levels and trends of pollution, as well as the effects of a wide range of contaminants, including persistent organic pollutants, heavy metals and radionuclides.[107] PAME addresses policy and non-emergency pollution prevention and control measures related to the protection of the Arctic marine environment from land and sea-based activities, including marine shipping, offshore oil and gas development and ocean disposal. In 2004, the report entitled "Impacts of a warming Arctic" described the possible impacts of climate change on Arctic ecosystems and society. In recognition of the need for a more coordinated and integrated strategic approach to meet the challenges of the Arctic marine environment, PAME is leading the development of an Arctic Marine Strategic Plan to guide Arctic Council activities related to the protection of the Arctic seas. CAFF aims at promoting the conservation of biodiversity and the sustainable use of living resources. It has published a substantive report on biodiversity and conservation in the Arctic, including marine areas.[108]

172. *Asia-Pacific Economic Cooperation (APEC)*. The Seoul Oceans Declaration, adopted at the first APEC Oceans-Related Ministerial Meeting in 2002, places importance on the implementation of an ecosystem-based approach in an integrated and cross-sectoral manner. It resolved to develop and promote better coastal and oceans management using an ecosystem-based approach and to develop a shared understanding of the concepts and practice underpinning the ecosystem-based approach to management.[109] A survey carried out on the implementation of the Seoul Oceans Declaration showed progress on the acceptance of the concept of the ecosystem approach in APEC member economies, many responding that their respective Governments had at least partially implemented the ecosystem approach for integrated coastal zone management or integrated oceans management, as well as new initiatives to promote shared understanding of the concepts and practice of an ecosystem-based approach for the management of oceans. However, the results also showed that the ecosystem approach appeared to be applied more consistently in the coastal and riverine regions than for the oceans, as States had legislation, policies or regulations for coastal regions containing references to the application of an ecosystem approach.[110] The Joint Ministerial Statement of the second APEC Oceans-Related Ministerial Meeting, held in 2005, noted the importance of an ecosystem-based approach to management to address the serious and continuing

threats from land and sea-based pollution, emerging problems from marine invasive species, marine debris and derelict fishing gear and the unsustainable farming and harvesting of ocean resources.[111] Ministers adopted the Bali Plan of Action, committing themselves to ecosystem-based management.[112]

173. *European Community*. A Thematic Strategy on the Protection and Conservation of the Marine Environment, the environmental pillar of the future maritime policy of the European Union, was issued by the European Commission in October 2005, together with a draft directive.[113] Their objective is to protect and restore Europe's oceans and seas and ensure that human activities are carried out in a sustainable manner. The strategy encompasses an ecosystem approach and sets out the course of action required to protect the marine ecosystem. It outlines synergies with other environmental measures and initiatives, including climate change, protection and restoration of habitats and species and integrated coastal zone management. Continued efforts are planned for the integration of such issues as fisheries, land-based human activities, maritime safety, research activities on marine ecosystems and industrial and civil waste. Additionally, it highlights the importance of cooperation with regional seas conventions and third countries. A Green Paper on a future maritime policy will be issued by the European Commission in 2006. The paper is set to define an integrated and comprehensive maritime policy, underpinned by scientific research to manage effectively the competing uses of the seas and bolster their growth potential without impairing the marine ecosystem.[114]

174. *New Partnership for Africa's Development (NEPAD)*. NEPAD, adopted by the African Heads of State and Government, is a programme of the African Union designed to meet its development objectives.[115] The Action Plan of the Environment Initiative of NEPAD was endorsed at the Summit of the African Union in 2003, following its consideration at the Super PreCom of the African Process and the Partnership Conference.[116] It includes an action plan on the conservation and sustainable use of coastal, marine and freshwater resources, which aims to incorporate environmental concerns into the development agenda of member States. This includes the management of Africa's coastal and marine resources in an integrated manner.[117] Proposed activities under this programme include addressing human activities and natural processes that impact the integrity of ecosystems and biodiversity.[118]

175. *Pacific Islands Regional Ocean Forum*. The Pacific Islands Regional Ocean Policy, adopted by 22 Pacific Island countries and territories in 2002, is implemented through the Pacific Islands Regional Ocean Framework for Integrated Strategic Action adopted in 2004.[119] The overarching theme is improving ocean governance through specific governance initiatives and actions. The Framework for Integrated Strategic Action includes the development and implementation of national ocean policies and action plans and the adoption of an integrated approach to the development and management of the oceans, to be achieved by strengthening processes that support integrated or ecosystem-based management, including assistance to develop the capacity to undertake integrated management which is responsive to local conditions, and the development of an integrated regional management plan and strategy for offshore and high seas areas.[120] The South Pacific Applied Geoscience Commission (SOPAC) administers the Oceans and Islands Programme, which aims to improve scientific knowledge of ocean and island ecosystems for the sustainable management of natural resources. The programme

includes assistance on mapping and monitoring the physical and chemical attributes of ecosystems and providing resource use solutions and assessments.[121]

2. Implementation by regional fisheries management organizations

176. From a fisheries perspective, it is important to sustain marine ecosystems whose living resources provide food and employment for present and future generations. Healthy, well functioning and productive ecosystems will provide optimal levels of production for harvesting. However, fisheries often impact on marine ecosystems. A management goal would therefore be to obtain the maximum benefit from harvesting without reducing the future value of the resources and the marine environment. Over-exploitation of fishery resources, illegal, unreported and unregulated fishing, the use of non-selective fishing gear as well as destructive fishing practices and techniques aggravate the effects of fishing on ecosystems. A number of regional fisheries management organizations have incorporated ecosystem considerations into regulatory measures for the conservation and management of marine living resources in their convention areas (see A/CONF.210/2006/1).

177. CCAMLR fully incorporates an ecosystem approach into its management regime.[122] The aim is not only to regulate fishing for certain species, but also to ensure that fishing does not adversely impact other species that are related to, or dependent on, the target species. For example, CCAMLR seeks to preserve the health of the ecosystem by setting conservative (i.e. precautionary) krill catch limits to take account of the needs of associated species in a manner that preserves the ecological sustainability of all the species concerned. By-catch issues are considered by the Working Group on Fish Stock Assessment and the Working Group on Incidental Mortality Associated with Fishing. CCAMLR has adopted seabird by-catch mitigation measures,[123] regulations on mesh size, a bottom-trawl prohibition around South Georgia and by-catch limits for several elasmobranch species. Compliance with MARPOL is promoted, in particular its annex V on garbage.[124] CCAMLR members report annually on both the incidence of marine debris encountered in the Convention area and its impact, including entanglements, on marine mammals and seabirds. CCAMLR promotes research in relation to both target and non-target species. Biological information on target species relating mainly to the growth, reproduction and natural mortality of the species being harvested is collected by both research vessels and commercial fishing vessels. The Ecosystem Monitoring Programme aims to detect and record significant changes in selected stocks of species that depend on, or are related to, targeted species, in order to distinguish between changes arising directly from harvesting and those which occur naturally as a result of physical or biological variability in the environment.

178. *Commission for the Conservation of Southern Bluefin Tuna*. The Commission has created a special advisory group on ecologically related matters, with the mandate to reduce by-catch and evaluate effects on associated species, and has taken measures to reduce the impact of fishing on ecologically related species and by-catch. For example, all vessels fishing for southern bluefin tuna must use tori poles to mitigate seabird mortality; education material on seabirds and sharks was distributed to fishermen in the southern bluefin tuna fishery; and members are required to collect data on by-catch species.

179. *Inter-American Tropical Tuna Commission (IATTC).* IATTC has adopted a number of conservation measures on the basis of scientific advice which includes information on ecosystem effects of fishing.[125] Furthermore, the Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention between the United States of America and the Republic of Costa Rica (Antigua Convention), which was adopted in 2003 in order to strengthen IATTC, implements the provisions concerning the adoption of measures for species belonging to the same ecosystem or associated with or dependant upon the target stocks; the adoption of measures to minimize waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependant species, in particular endangered species. In 2004, IATTC adopted a resolution on by-catch designed to reduce the by-catch of juvenile tunas and non-target species including dolphins, turtles, seabirds and sharks, and the release of unharmed non-target species.[126] The Agreement on the International Dolphin Conservation Programme, which came into force in 1999, provides measures to mitigate the effect of purse-seining on dolphin stocks. IATTC addressed the issue of lost or abandoned fishing gear and related marine debris in its resolution on by-catches, by prohibiting vessels from disposing of salt bags or any other type of plastic garbage at sea.[127]

180. *International Commission for the Conservation of Atlantic Tuna (ICCAT).* ICCAT has adopted resolutions calling for the monitoring of interactions between its fisheries and pelagic sharks, seabirds and sea turtles. The Standing Committee on Research and Statistics has a Subcommittee on By-catch and a Subcommittee on Environment, both of which address issues related to the effects of fishing on the environment. At its 2005 meeting, the Committee recommended that the two subcommittees be merged together into an Ecosystems Subcommittee. ICCAT has adopted recommendations on minimum size and time/area closure for several species (yellowfin tuna, bigeye tuna, bluefin tuna and swordfish) and measures to encourage the release of live discards of billfish and bluefin tuna. The use of driftnets is prohibited in the Mediterranean and discouraged throughout the Convention area.[128] ICCAT encourages submission of by-catch and interaction statistics as well as development of national action plans for sharks and seabirds.

181. *Indian Ocean Tuna Commission (IOTC).* IOTC recognizes the importance of considering the impact of fishing on the ecosystems associated with the target tuna species and established a Working Party on By-catch which reports to the Commission via the Scientific Committee. IOTC encourages the participation in its meetings by parties to the Indian Ocean-South-East Asian Marine Turtle Memorandum of Understanding, as well as by relevant non-governmental organizations. IOTC has not yet established sampling requirements for by-catch, and the By-catch Working Group, established in 2002, has only recently released a work plan to address this issue. In 2005, IOTC adopted a resolution on the conservation of sharks caught in association with fisheries managed by IOTC. One hundred and thirty recommendations on sea turtles and on incidental mortality of seabirds were also adopted.[129]

182. *North-West Atlantic Fisheries Organization (NAFO).* Until now, NAFO has generally managed stocks on an annual stock-by-stock and single species basis. The development of an ecosystem-based approach by NAFO is being discussed and NAFO scientists are tasked to look into areas of marine biological and ecological significance. In addition, fishing vessels will collect, on a voluntary basis, data on seamounts in the NAFO area. NAFO has in place a number of regulations to

diminish by-catch, including gear and fish size requirements, and area and time restrictions and by-catch requirements obliging fishing vessels to stop fishing and move location when a certain percentage of by-catch species has been reached.[130] Discards have to be recorded in the logbook and are reported by observers.

183. *North-east Atlantic Fisheries Commission (NEAFC).* NEAFC has decided to take a broader ecosystem approach to fisheries management. It cooperates with relevant organizations, including the OSPAR Convention and the Inter-Organizational Consultation Forum established by the Environment Directorate-General of the European Union to coordinate work on the management and protection of the marine environment in European waters. In 2004, NEAFC closed to fishing activities five seamounts on the high seas in order to protect vulnerable deep-water habitats. In 2005, NEAFC agreed to amend its Convention to give it a clearer mandate to pursue the ecosystem approach, protection of biodiversity and the precautionary approach. Parties will apply the amendments provisionally until ratifications are finalized in early 2006. At a joint meeting with OSPAR representatives in November 2005, it was agreed that the integration of fisheries and environmental concerns should begin at the national level and move up to regional organizations. Special measures have been taken to control the use of certain fishing gear that could harm other marine species.[131]

184. *Western and Central Pacific Fisheries Commission (WCPFC).* WCPFC is dedicating specific attention to issues relating to biodiversity, including non-target and associated species. Two fisheries-related regional organizations in the Pacific Islands region, the Secretariat of the Pacific Community and the Forum Fisheries Agency have recently received funding through the Global Environment Facility to work on, among other things, impacts of fisheries on deep-sea benthic ecosystems in the Convention Area, in particular on seamounts. WCPFC will follow this research closely, and in 2006 the Secretariat of the Pacific Community will be contracted as the provider of scientific advice to WCPFC.

3. Implementation at the national level

185. A number of States have adopted a national oceans policy or an integrated ocean management framework that incorporates an ecosystem approach. Others are in the process of adopting or formulating a framework to implement an ecosystem approach in their oceans policy. Some States have developed an Integrated Coastal Zone Management Centre and are examining ways of incorporating an ecosystem approach into their Centre. Others have recognized the importance of implementing an ecosystem approach, but have experienced difficulties in harmonizing the work of different agencies under different mandates, as well as coordination among different government agencies and other stakeholders, involving competing interests.[132] Many States require assistance in developing the human and institutional capacity necessary to apply an ecosystem approach. Where large marine ecosystem projects are being implemented, the harmonization of national action plans with regional strategic action programmes is required.[133] The following States are among those that have developed or are in the process of developing a national ocean policy: Australia, Brazil, Canada, Chile, China, Costa Rica, India, France, Jamaica, Japan, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Portugal, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland, the United Republic of Tanzania, the United States of America and Viet Nam.[134] Owing to the limitations on the length of the report, the

details of only those countries that appear to be the most advanced in the implementation of an ecosystem approach in their respective regions are described below.

186. *Australia*. The Oceans Policy announced in 1998 was drafted after a broad consultation process. It is a framework policy with no direct supporting legislation and implemented within the framework of the Environment Protection and Biodiversity Conservation Act. Not replacing existing legislation, it was intended to integrate and coordinate existing management mechanisms. One of its main principles is the integrated ecosystem-based planning and management for the multiple uses of the oceans. It aims to ensure the maintenance of ecological processes in all ocean areas, marine biological diversity and viable populations of all native marine species in functioning biological communities. It seeks to integrate across jurisdictions and sectors to ensure that all impacts on the ecosystems are considered concurrently. The Oceans Policy was initially implemented through "regional marine planning", following which the Australian exclusive economic zone was divided into six large marine ecosystems on the basis of bathymetry, bathymetry variance, water column properties and seafloor plate age. As they were too broad, they have been replaced by "marine bioregional plans". The plans identify conservation priorities, existing human uses, pressures and threats to the environment. Sustainability indicators and strategies are to be developed to monitor their implementation. In order to ensure cooperation among the large number of bodies involved in its implementation, consultative and administrative bodies have been established to provide a forum for discussion between government officials, non-government stakeholders, such as the representatives of relevant industries, indigenous groups and conservation interest groups, and marine science experts.[135]

187. *Canada*. The Oceans Act was enacted in 1996 after broad consultations. Not superseding existing legislations or regulations, it provides a new context for them and a broad framework for further policy development. The Act gives the Minister for Fisheries and Oceans authority to develop and implement the national oceans policy and to coordinate the development of integrated management plans with other federal departments and other levels of Government. The Act includes principles to guide the implementation of integrated management plans based on an ecosystem approach and states that the structure, function and overall environmental quality of ecosystems must be maintained. The Act established a Marine Protected Areas Programme and a Marine Ecosystem Health Programme, under which national marine environmental quality guidelines, objectives and criteria for each ecosystem were developed subject to an integrated management plan. The criteria allowed for the monitoring of ecosystem health. Thirty integrated management and marine protected areas projects were established within the pilot phase of five years and lessons drawn from the pilot projects were used in the formulation of the Oceans Strategy, which was released in 2002 after a broad consultation process. It emphasizes the principle of integrated management and the promotion of an ecosystem-based approach to management. The integrated management approach stresses flexibility and adaptive management, incorporating new scientific information, technical developments, environmental responses and changing economic and social objectives. The Strategy is implemented by establishing "large oceans management areas" and "coastal management areas". They are scientifically defined, based on ecological features and functions, and a science-based review of the threats to the ecosystem is conducted. The implementation of the Act and

Strategy has required horizontal and vertical integration within the Government and interdepartmental committees and joint federal-provincial councils have been established.[136]

188. *Mexico*. Mexico is currently in the process of developing an Environmental Policy for Sustainable Development of Oceans and Coasts, which includes the objective of developing a strategy for the integrated management of oceans and coasts. The policy will be based primarily on an ecosystem-based management or an integrated management strategy focused on the analysis of the ecosystem as a unit. It is to be implemented with transparency, including access to information and accountability, and promoted by all the federal agencies. Moreover, it is intended to enter into force as a joint working programme within the Ministry of Environment and Natural Resources and used as a platform for discussion on the federal policy on integrated management of oceans and coasts as it relates to the Oceans Agenda Project. This is an initiative led by the President's office to integrate, through the coordinated efforts of the federal agencies, projects and proposals for the regulation of coastal and oceans activities.[137]

189. *Norway*. The implementation of an ecosystem-based approach to oceans management is a significant aspect of Norway's current oceans policy. Two draft laws have been submitted: the comprehensive Oceans Resources Act and the Biodiversity Act. A comprehensive management plan is being developed for the Barents Sea region as a result of the report to the Parliament (2001-2002) on the environmental status of Norway's oceans. The report recognized the necessity of coordinating human uses of the oceans to ensure that the total human impact on the marine environment does not exceed the limits of sustainability. The Barents Sea is the first area for which such a plan is established and the intention is that such plans are to be developed for all ocean areas under Norwegian jurisdiction. The plan has required close cooperation between agencies from different sectors, under the oversight of a high-level inter-ministerial group. Its purpose is to establish a holistic framework for decision-making that takes into account the interests of fisheries, petroleum, transportation, as well as the environment. The plan, to be finalized in 2006, will identify impacts from these activities and specify the environmental consequences. A number of studies have been undertaken to assess impacts on a sectoral basis and the consequences of various activities are to be evaluated against specific environmental objectives. The most cost-effective measures to achieve those objectives are to be selected.

190. *Philippines*. The National Marine Policy, adopted in 1994, includes priority objectives on the protection of the marine ecology/environment and the development and management of coastal resources within an integrated coastal zone management framework. The Sustainable Archipelagic Development Framework, an initiative of the Department of Environment and Natural Resources of the Philippines and the United Nations Development Programme (UNDP), is currently being proposed for executive endorsement and implementation as a replacement or an alternative to the National Marine Policy. It seeks to adapt coastal and marine resource use to a more rational, integrated and comprehensive approach. One of its overall objectives is to harness and strengthen partnerships among various stakeholders regarding national marine and coastal ecosystems. A Philippine Archipelagic Ecosystem Approach is one of the core principles in its strategic programme, together with sustainable development and shared stewardship of the country's archipelagic heritage. Communication with stakeholders to enhance

understanding of the oceans, ocean processes, marine resources and ecosystem is one of its principles.[138]

191. *Senegal*. Senegal has an Integrated Marine and Coastal Resources Management Programme funded by the Global Environment Facility through the World Bank and implemented by the Ministry of Environment and Sanitation. The programme's objective is the sustainable management of resources, which includes its responsible use, together with the protection of critical ecosystems and ecological processes. The conservation and management of its coastal and marine ecosystems is to be achieved through the use of protected areas, designing and testing approaches that integrate biodiversity conservation and sustainable use concerns with poverty alleviation and socio-economic development. The programme objectives will be implemented through the development of sustainable fisheries, conservation of critical habitats and species and programme management, including its monitoring and evaluation, and communication. One of the components in the conservation of critical habitats and species is to manage ecosystems by updating, preparing and implementing management plans for three project sites, incorporating the ecosystem approach as a model of sustainable economic use and biodiversity concerns.[139]

192. *United Kingdom of Great Britain and Northern Ireland*. In 1999, the Government of the United Kingdom initiated a review of marine nature conservation, bringing together marine industries and nature conservation organizations with representatives of Government departments and agencies. The 2002 interim report, (Marine Stewardship Report), which endorsed the use of the ecosystem approach to marine spatial planning, established the Irish Sea Pilot Project. The report's recommendations include the need to support strategic goals for the marine environment in order to achieve successful application of the ecosystem approach and to avoid incentives and subsidies which encourage or support unsustainable impacts on ecosystems.[140] The final report on the review was published in 2004. In March 2005, the Government published "Charting Progress: An Integrated Assessment of the State of UK Seas", followed by "Safeguarding Sea Life: the joint UK response to the Review of Marine Nature Conservation", which emphasizes the importance of sustainable development and the use of the ecosystem approach to reach that goal. It sets out an overarching policy supported by a number of strategic goals and measures for the application of the ecosystem approach. Currently a Maritime Bill is being drafted to introduce a streamlined system for planning and managing activities and extending the scope for protecting and restoring marine species and habitats.[141] The Government has stated "[t]o obtain best value from different uses of our valuable marine resources, we must maintain and protect the ecosystems on which they depend".[142]

193. *United States of America*. The Oceans Act, 2002, created the United States Commission on Ocean Policy mandated to establish findings and develop recommendations for a new and comprehensive national oceans policy.[143] The Commission issued its recommendations in 2004. It recommended "moving towards an ecosystem-based management approach by focusing on three cross-cutting themes: a new, coordinated national ocean policy framework to improve decision-making, cutting edge ocean data and science translated into high-quality information for managers, and lifelong ocean-related education to create well-informed citizens with a strong stewardship ethic".[144] It also recommended, among the guiding principles, ecosystem-based management, whereby ocean and coastal resources are

managed to reflect the relationships among all ecosystems components, including human beings and non-human species and the environments in which they live. It recommended defining relevant geographical areas based on ecosystems rather than political boundaries. In response, the President announced the Ocean Action Plan and established the Committee on Ocean Policy, part of the Council on Environmental Quality. The Action Plan states that "the Administration will continue to work towards an ecosystem-based approach in making decisions related to water, land and resource management in ways that do not erode local and State authorities and are flexible to address local conditions".[145] The Plan establishes new structures to improve federal coordination and governance, including the establishment of a Subcommittee on Integrated Management of Ocean Resources.

E. Capacity-building

194. International cooperation will be essential to build the necessary capacities in developing countries, in particular for scientists and resource managers.[146] The fostering of national capabilities presents special challenges in developing countries, because of the scarcity of financial support, the reduced domestic awareness of the overall potential of marine resources, including the value of marine ecosystems, and the lack of appropriately trained human resources at the local level. International cooperation, through bilateral, regional and international financial organizations and technical partnerships, will play a key role in enhancing capacity-building activities, such as the transfer of environmentally sound information and the technology associated with the sustainable development of marine resources.[147]

195. *UNEP Regional Seas Programme*. Almost all the Regional Seas programmes established by UNEP have incorporated capacity-building strategies related to the concept of the ecosystem approach to management.[148] The Action Plan of the East Asian Seas is governed by the Coordinating Body on the Seas of East Asia (COBSEA). COBSEA is a regional scientific programme that involves the conduct of research on the prevention and control of marine pollution in the East Asian Seas. Still, the lack of full understanding of the marine ecosystem and interdependence of fish stocks, and impacts of human activities on the marine ecosystems was pointed out as part of the challenges for an ecosystem-based management in the Asia-Pacific region. Strong capacity-building activities among States and regional organizations, including sharing of knowledge and information, was deemed to be crucial to effectively manage resources and protect the marine environment.[149] In addition, UNEP is cooperating with the South Pacific Regional Environment Programme with regard to the Action Plan for Managing the Environment of the South Pacific Region, which includes a subprogramme on ecosystem management. It aims to raise public awareness and understanding of the role of ecosystems in maintaining the integrity of islands and their importance in the economy.

196. *World Bank*.[150] The World Bank considers its international cooperation and global partnerships to be powerful instruments in fostering sustainable use of marine ecosystems. The Bank, whose focus as an international financial institution is on reducing poverty and sharing knowledge, is committed to supporting the establishment of institutions, values and practices that will safeguard the future of marine resources and the health and livelihood of communities that depend on these resources for their income, nutrition and quality of life. While relevant marine ecosystem components are included in the design of the Bank's projects with

broader agendas, implementation of the ecosystem approach remains difficult. In pursuit of its efforts to foster good governance, the Bank is mindful of weaknesses in maritime enforcement at the national, regional and global levels.

197. The World Bank has reported on the funding of partnership studies and development of global goods which directly support marine ecosystem integrity through the Development Grant Facility (internally generated funds) and funds held in trust. Relevant global partnerships mainly target coral reefs, invasive species, research, critical ecosystems and fisheries. For example, the Targeted Research and Capacity-Building for Coral Reef Management Partnership ($2.5 million) has established a global network of eminent coral reef scientists who work together across disciplines to provide knowledge and capacity-building and to base coral reef management policies on sound scientific practices. The Bank also participates in the International Coral Reef Initiative and the Global Invasive Species Programme. Through the Critical Ecosystem Partnership Fund, the Bank provides funding and technical assistance to civil society groups working in many of the Earth's marine and coastal biodiversity hotspots. Although most of the Bank's global partnerships have a worldwide scope, the programmes are primarily intended to benefit developing countries.

198. *Global Environment Facility*. The large marine ecosystems concept promotes a multisectoral and integrated approach to management of the marine environment.[151] Large marine ecosystems projects are primarily funded by the Global Environment Facility and implemented by several bodies, including UNDP, UNEP, FAO, IMO, IOC, UNIDO and the World Bank. Sixty-four large marine ecosystems were identified and 32 Global Environment Facility international waters projects were launched from 1991 to 2002 to address the protection of vulnerable marine ecosystems. They are designed to address poorly managed and uncoordinated human activities across sectors affecting shared water resources, such as sea and land-based pollution, habitat loss, introduction of exotic species and over-harvesting of living and non-living marine resources. The aim is to achieve a comprehensive, ecosystem-based approach to the sustainable management of international waters and to incorporate both developmental and ecological needs.[152] The projects facilitate intersectoral and participatory approaches to natural resource management planning and implementation on an ecosystem scale. One hundred and twenty-one countries are proceeding to meet ecosystem-related targets to address over-fishing, fishing down food webs, destruction of habitats and accelerated nitrogen export.[153] In 14 projects, 111 countries engaged in the Transboundary Diagnostic Analysis process have begun to analyse the large marine ecosystems scientifically to identify the root causes of trends in large marine ecosystem biomass yields and the most pressing issues among coastal pollution, damaged habitats and depleted fish stocks.[154]

199. A Strategic Action Programme is agreed upon for each large marine ecosystems project by the collaborating countries. The Programme contains policy, institutional and other socio-economic actions to be taken both at the national and regional levels, based on the transboundary concerns identified in the Transboundary Diagnostic Analysis.[155] For example, the South China Sea project includes in its Strategic Action Programme the development of criteria for the selection of marine habitats and areas critical to the maintenance of regionally important fish stocks and the identification and prioritization of specific areas for future management and protection. Based on the Programme, proposals for actions

to be taken at the national level are made. In the case of the South China Sea project, this includes the establishment of marine protected areas in places identified as critical habitats for fish stocks and the implementation of information dissemination programmes on fish stock conservation and sustainable fishery practices to small and artisanal fishing communities.[156] The requirement to develop a national action plan by each member State is included in most Strategic Action Programmes. For example, in the Benguela Current Large Marine Ecosystem Project, the national plan should include details of responsibilities and specific projects to implement the Programme. Some common features of actions formulated in Strategic Action Programmes include problems associated with modules of productivity, fisheries, pollution and ecosystem health, and socio-economics.[157]

XI. The marine environment, marine resources and sustainable development

A. Protection and preservation of the marine environment

1. Land-based activities

200. The Coordination Office of GPA[158] continues to urge Governments to further the application of the ecosystem approach to coasts, oceans and islands management. Governments are encouraged to strengthen national, regional and global cooperation in order to reach the target of the application of the ecosystem approach by 2010 (set out in the Johannesburg Plan of Implementation). To enhance understanding of this work, in 2005, the UNEP/GPA Coordination Office revamped and updated the GPA website.[159]

201. UNEP/GPA has provided substantive support to national Governments to develop national programmes of action for the implementation of GPA. As a result, over 70 countries are in the process of, or have finalized, their respective national programmes of action. Governments that have developed or are currently preparing national programmes of action include Algeria, Bangladesh, Brazil, Canada, Chile, China, Colombia, Costa Rica, Egypt, Finland, Iceland, India, Jamaica, Nigeria, Pakistan, Panama, the Russian Federation, Sri Lanka, Saint Lucia, Trinidad and Tobago, the United Republic of Tanzania and Yemen.

202. During 2005, the Physical Alterations and Destruction of Habitats (PADH) programme of the UNEP/GPA Coordination Office continued to support stakeholders in their efforts to protect coastal and marine habitats against alterations and destruction from human development. Since most habitat modification occurs during initial stages of development, the programme focused on planning, design and construction, with an emphasis on developing and enforcing policies to address sustainability of the coastal resource bases (including soil and water) which create specific conditions for fulfilment of essential ecological functions. Careful delineation of coastal areas in the form of land zoning has been widely advocated and has received positive considerations from many countries. The PADH programme has also encouraged the selection of best management practices and standards supported by political commitment to adhere to rules and enforcement of legislation. Pilot projects with high demonstration values considered effective in promoting environmentally sound operation and management of activities have been supported in various parts of the globe.

203. In 2006, the UNEP/GPA Coordination Office will continue to draw global attention to links between integrated water resources management, integrated river basin management and integrated coastal area management, including through the "FreshCo" Partnership (stemming from the World Summit on Sustainable Development) with, inter alia, the Danish-based UNEP Collaborating Centre on Water and Environment.

204. UNEP/GPA is closely cooperating with China, other Governments, intergovernmental bodies, United Nations institutions and other stakeholders in preparation for the Second Intergovernmental Review Meeting, scheduled to be held in Beijing from 16 to 22 October 2006. The preparatory process was launched at several global meetings, including the Global Forum on Oceans, Coasts and Islands, UN-Oceans, the sixth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-6) and the Ocean Policy Summit 2005. A joint UN-Oceans/UN-Water Task Force is being set up to provide guidance on the preparatory work for the Second Review Meeting.

205. UNEP activities at the regional level include the preparation of legal guidance to translate the Regional Seas Conventions and Action Plans (RSCAPs) of four regions (Mediterranean, East Asia, North-west Pacific and the Caribbean) into national legislation and an institutional structure. A regional capacity-building workshop was also held in the Pacific. The workshop helped to identify means for coordinated implementation of RSCAPs with related environmental conventions, including the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention) and the Stockholm Convention on Persistent Organic Pollutants. UNEP also supported the development and revision of protocols on land-based sources of pollution for the Caspian Sea, Black Sea and the Eastern Africa region. In addition, the 14th Conference of the Contracting Parties to the Barcelona Convention (Portoroz, Slovenia, November 2005) approved, inter alia, the Mediterranean Strategy for Sustainable Development. The Declaration, which includes the Strategy, sets out guidelines for two major multiannual programmes on land-based pollution sources and biodiversity.

206. In the field of monitoring and assessment activities to support knowledge-based policy making, a memorandum of understanding was signed between UNEP and the IAEA Marine Environment Laboratory, within the framework of the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention) and the Global Environment Facility Western Indian Ocean Project on Land-based Activities, to assess the monitoring and analysis capacities of key laboratories in the Western Indian Ocean region with regard to monitoring of water and sediment pollution and to prepare a draft programme for regional capacity-building for monitoring and analysis of water and sediment pollution.

2. Pollution from ships

207. *Prevention of pollution.* It is estimated that two thirds of the world's oil trade (both crude oils and refined products) moves by tanker. About 43 million barrels per day of that trade is crude oil.[160] Tankers are a low-cost and efficient form of transport. At the end of 2004, it was estimated that of the global fleet of 8,771 tankers, comprising pure chemical tankers, oil-chemical tankers and oil or product tankers, some 65 per cent by tonnage and 56 per cent of the number of existing

tankers above 5,000 dwt were double-hulled. The remaining 3,302 tankers were less than 5,000 dwt and thus not subject to phase-out regulations for single-hulled tankers.[161]

208. The provisions of MARPOL 73/78 have been instrumental in reducing pollution of the marine environment from ships. However, accidental oil spills still occur at irregular intervals and illegal discharges and the cumulative impact of operational discharges remain a problem. With regard to construction standards, it has been noted that although the double-hull tanker requirement would undoubtedly lead to a reduction in pollution, it would not be the panacea for preventing future pollution from tankers. While for low energy collisions and minor groundings a double-hulled oil tanker is much less likely to spill oil than a single-hulled tanker, it has been suggested that in some recorded incidents, a double-hulled tanker may fare no better than its single-skinned predecessor, for example, in case of fire, explosion, collisions and groundings, machinery or hull structural failure and human error. The European Commission has raised these concerns at the IMO Assembly and presented recommendations designed to improve the safety of double-hulled oil tankers.[162]

209. Future measures to address pollution of the marine environment as a result of operational discharges include the decisions by IMO to develop amendments to MARPOL 73/78 in order to prevent marine pollution during an oil transfer operation between ships at sea and to tackle the long-standing problem of alleged inadequacies of port waste reception facilities. The General Assembly, in paragraph 68 of its resolution 60/30, welcomes the work of IMO to identify problem areas and develop an action plan addressing the inadequacy of port waste reception facilities. In paragraph 66, it encourages States to develop cost recovery systems that provide an incentive to use port reception facilities and discourage ships from discharging marine debris at sea. Moreover, in paragraph 67, the Assembly invites IMO, in consultation with relevant organizations and bodies, to assess the effectiveness of annex V to MARPOL 73/78 in addressing sea-based sources of marine debris.

210. Recent measures to address illegal discharges of oil from vessels include the efforts made by Interpol and its member States to increase penalties associated with the illegal discharge of oil, so as to deter future pollution. Furthermore, in order to facilitate effective law enforcement by flag States, Interpol is currently compiling a best practices manual for the investigation of illegal oil discharges from ships.[163]

211. *Response to pollution incidents*. Where an oil pollution incident or a pollution incident by hazardous and noxious substances occurs, prompt measures must be taken to combat it. Experience has demonstrated the critical importance of administrative procedures to facilitate the rapid provision of assistance and deployment of human resources and equipment in cases where the assistance of other States is required to respond to a major pollution incident. The International Convention on Oil Pollution Preparedness, Response and Cooperation and the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances require a State party to, inter alia, take the necessary legal or administrative measures to facilitate the arrival, utilization in, or expeditious movement through, and departure from its territory, of ships, aircraft and other modes of transport engaged in responding to a pollution incident or transporting personnel, cargoes, materials and equipment required to deal with such an incident. In addition, States parties have been urged by the IMO Assembly to

implement the 2005 IMO Guidelines for Facilitation of Response to a Pollution Incident,[164] which provide States with important guidance on how to facilitate the prompt provision of assistance to minimize the consequences and effects of pollution incidents. They recommend that if States do not have bilateral or multilateral agreements to cover arrangements for providing mutual assistance, they should render such assistance in accordance with the Guidelines, unless they agree otherwise.

212. IMO and UNEP are jointly developing an IMO/UNEP Guidance Manual on the Assessment and Reinstatement of Environmental Damage following Marine Oil Spills that aims to assist those who have been affected by oil spills to properly assess damage with a view to compensation as well as to effectively reinstate those ecosystems that have been adversely affected by oil spills.

213. Developments at the regional level include the agreement at the tenth intergovernmental meeting of the Northwest Pacific Action Plan (Toyama, Japan, November 2005) to, inter alia, expand the geographical coverage of the Northwest Pacific Action Plan (NOWPAP) Oil Spill Regional Contingency Plan to cover the area between 33° and 55° N and from 121° to 145° E.

214. *Compensation for pollution damage*. Compensation is available for oil pollution damage caused by oil spills from tankers through the International Oil Pollution Compensation Fund, 1992. The total amount of compensation available under the Fund is approximately 203 Special Drawing Rights ($315 million). The Supplementary Compensation Fund, created following the entry into force on 3 March 2005 of the Protocol to the 1992 Fund Convention, has available an additional amount of $780 million for compensation for damage occurring in States members of the Supplementary Fund.[165]

215. However, compensation is not yet available for damage in connection with the carriage of hazardous and noxious substances by sea. IMO and the International Oil Pollution Compensation (IOPC) Funds have underlined the importance of the entry into force of the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention). In order to promote ratification, the IOPC Funds organized a workshop in August 2005 to which all Funds member States and States with observer status were invited. Discussions were based on the Guide for the Implementation of the HNS Convention developed by the Funds' secretariat. The latter has also developed a system to monitor contributing cargo under the Convention, which includes a database of all substances qualifying as hazardous or noxious.

216. *Particularly Sensitive Sea Areas (PSSAs)*. A marine area that may be vulnerable to damage by international maritime activities for recognized ecological, social, cultural, economic, scientific or educational reasons and requires special protection may be proposed for designation as a PSSA pursuant to the IMO Guidelines for the Identification and Designation of PSSAs. Several marine areas have been designated as PSSAs so far, including most recently the Torres Strait as an extension of the existing Great Barrier Reef PSSA (Australia and Papua New Guinea), the Canary Islands (Spain), the Galapagos Archipelago (Ecuador) and the Baltic Sea Area (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden). Associated protective measures for the Galapagos Archipelago (an area to be avoided) and for the Baltic Sea Area (new and amended traffic separation

schemes, a new recommended deep-water route and areas to be avoided) were adopted by the IMO Assembly in 2005 and will be implemented on 1 July 2006.[166] The Russian Federation informed the Assembly that it would support and implement the new measures in the Baltic Sea as routing measures, but not as associated protected measures, since it did not associate itself with the decision to designate the Baltic Sea as a PSSA.[167]

217. Future proposals for PSSAs must now be submitted and will be considered in accordance with the procedures set out in the Revised Guidelines for the Identification and Designation of PSSAs adopted by the IMO Assembly in 2005 (resolution A.982(24)). Any PSSA proposal must include information and documentation to establish that at least one of the criteria listed in the Guidelines exists throughout the entire proposed area. However, the same criterion need not be applicable throughout the entire area. An application for PSSA designation should also contain a proposal for an associated protective measure that the proposing Government intends to submit to the appropriate IMO body. The legal basis of a measure must be identified, that is, whether it is being proposed pursuant to an existing IMO instrument, whether it is a measure that could become available by amending an existing IMO instrument or adopting a new one, or whether it is being proposed for adoption pursuant to UNCLOS, where existing measures or a generally applicable measure would not adequately address the particular needs of the proposed area. Alternatively, if no new associated protective measure is being proposed because IMO measures are already associated with the area, the application should show how the existing measures are protecting the area.

218. *Air pollution from ships.* IMO is actively pursuing ways to reduce air pollution from ships. It is engaged in follow-up activities relating to MARPOL annex VI (regulations for the prevention of air pollution from ships), the NO_x (nitrous oxide) Technical Code, reduction of greenhouse gas emissions from ships and cooperation between the secretariats of IMO and the United Nations Framework Convention on Climate Change.

219. In promoting the implementation of MARPOL annex VI, which entered into force on 19 May 2005, IMO has developed several new guidelines, including for port State control purposes, onboard exhaust gas-SO_x (sulphur oxide) cleaning systems, as well as amendments to the Survey Guidelines under the Harmonized System of Survey and Certification. IMO also prepared a Marine Environment Protection Committee circular on the Interim guidelines for voluntary ship CO_2 (carbon dioxide) emission indexing for use in trials. Moreover, IMO has agreed on the need to undertake a general review of MARPOL annex VI and the NO_x Technical Code with a view to revising the regulations to take into account the current technology and the need to further reduce air pollution from ships. That revision is expected to be completed in 2007. Lastly, the North Sea SO_x (sulphur oxide) Emission Control Area (SECA) amendment to MARPOL annex VI will enter into force on 21 November 2006, with full implementation 12 months later.

3. Waste management

220. *London Convention, 1972.* The contracting parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, held their 27th Consultative Meeting in October 2005. In preparation for the entry into force of the 1996 Protocol, the Meeting continued with the development of

compliance procedures and mechanisms under the Protocol, which began in 2003. The Consultative Meeting also reviewed an analysis of the views of some parties concerning the compatibility of CO_2 sequestration in sub-seabed geological structures with the London Convention and Protocol. In light of this analysis, the Meeting (a) acknowledged that CO_2 sequestration had a role to play, as part of a suite of measures to tackle the challenge of climate change and ocean acidification, (b) agreed that the London Convention and Protocol were appropriate global instruments to address the implications of CO_2 sequestration for the marine environment, (c) recognized that there were varying interpretations of how both instruments apply in different circumstances to CO_2 sequestration and (d) agreed to consider, at the 28th Consultative Meeting, how best to facilitate and/or regulate CO_2 sequestration in sub-seabed geological structures under the Protocol and the Convention.[168]

221. These discussions are likely to be taken up by the first Meeting of the States Parties to the 1996 Protocol, which will be held in conjunction with the 28th Consultative Meeting, from 30 October to 3 November 2006. The 1996 Protocol to the London Convention will have entered into force on 24 March 2006, 30 days after its 26th ratification by Mexico on 22 February 2006. Detailed information on the 1996 Protocol was provided in document A/51/645 (paras. 206-209).

222. At the regional level, UNEP is collaborating with the London Convention to develop a proposal on ways to overcome barriers in implementation and compliance with the Convention in regional seas.

223. *Basel Convention*. The Indian Ocean tsunami has undoubtedly resulted in a number of uncontrolled localized releases of toxic and hazardous materials to terrestrial and marine environments. Emergency response activities (e.g., fogging for vector control, medical care in ad hoc facilities and excess of plastic wrapping materials) and disruption of normal routines may exacerbate problems of medical waste disposal. In response, the secretariat of the Basel Convention contributed to the preparation of guidelines regarding hazardous waste management in the tsunami-affected areas. In addition, it is working closely with the UNEP Asian Tsunami Task Force.

4. Marine debris

224. Marine debris is found in all sea areas of the world, not only in densely populated regions, but also in remote places far away from any obvious sources. Marine litter comes from both sea-based sources (see para. 209) and land-based sources. UNEP/Regional Seas Programme and UNEP/GPA have been developing and implementing a number of activities on the management of marine litter, including the publication in 2005 of "Marine litter: an analytical overview" and "Tightening the noose". They are developing regional action on marine litter in several RSCAPs: Black Sea; Caribbean; Caspian Sea; East Africa and Nairobi Convention; East Asian Seas; NOWPAP; Mediterranean; Red Sea and Gulf of Aden; South Asia Seas; and South East Pacific. UNEP/Regional Seas Programme has also been developing relevant activities in consultation and, where appropriate, in cooperation with United Nations agencies, including IMO, IOC, FAO and the secretariat of the Basel Convention.

225. UNEP/Regional Seas Programme is proposing the development of a global initiative on marine litter management, which would concentrate on pilot regions

that are particularly affected. It would also provide a global platform for cooperation and coordination of activities for the control and management of marine litter. A proposal for a Global Environment Facility Medium-sized Project would establish the necessary regional foundations and regional/national capacities to address the problem of management of marine litter. The results of this project, through activities in pilot regions, will allow further development of a global initiative.

226. *Abandoned/lost fishing gear* is increasingly becoming a worldwide concern. A memorandum of understanding has been developed between UNEP and FAO for the "review of available relevant information and the preparation of a document on marine litter and abandoned/lost fishing gear". The objective of the memorandum of understanding is to strengthen cooperation between FAO and UNEP by developing a study, following the ecosystem approach, and a document on marine litter and abandoned/lost fishing gear based on a comprehensive review of available information. The feasibility of the development of joint programmes, activities, capacity-building, education and public and sectoral outreach between regional fisheries bodies and regional seas programmes will be assessed for pilot regions to be selected jointly by FAO and UNEP, focusing on abandoned/lost fishing gear, and taking into account the respective mandates, objectives and scope of the regional seas programmes and regional fisheries bodies. The final document will include information on the current status of abandoned/lost fishing gear in the legislation of selected regions and countries, quantities and distribution of abandoned/lost fishing gear, surface oceanic circulation, movement and accumulation of floating abandoned/lost fishing gear, national/regional programmes and initiatives regarding abandoned/lost fishing gear, and institutional structures and policies at the regional and national levels.

5. Ship breaking/dismantling/recycling/scrapping

227. The main issue concerning ship breaking/dismantling/recycling or scrapping is finding an acceptable and safe manner of disposing of obsolete vessels, protecting the environment and the safety and health of workers.[169]

228. The 24th IMO Assembly, by its resolution A.981(24), endorsed Norway's proposal to develop, as a high priority, a new instrument on ship recycling with a view to providing legally binding and globally applicable ship recycling regulations. The proposal includes enforcement and reporting mechanisms as well as requirements for the shipping industry and recycling facilities. It was agreed that the instrument should be completed for consideration and adoption in the biennium 2008-2009. IMO is continuing its work on the promotion of implementation of the IMO Guidelines on Ship Recycling. The Assembly adopted amendments to the Guidelines, relating to the inventory of potentially hazardous materials present in a ship's structure and equipment and the Green Passport for ships. Lastly, IMO is working on establishing, in the near future, an International Ship Recycling Fund that will promote the safe and environmentally sound management of ship recycling.

229. *Basel Convention*. The Open-ended Working Group of the Basel Convention prepared a questionnaire to facilitate the analysis of the information submitted by the parties on the abandonment of ships on land or in ports. The replies to the questionnaire have been compiled and submitted to the Joint ILO/IMO/Basel Convention Working Group on ship scrapping. Both the IMO Legal Committee and

the Open-ended Working Group are due to discuss the issue of abandonment of ships on land or in ports at their respective sessions in April 2006.

230. *Joint ILO/IMO/Basel Convention Working Group on Ship Scrapping*. The second session of the Joint Working Group was held at the United Nations Office at Geneva from 12 to 14 December 2005. The main topics discussed were the proposed new legally binding instrument on ship recycling; promoting the implementation of the relevant Guidelines of ILO,[170] IMO and the Basel Convention on ship scrapping; abandonment of ships on land or in ports (deferred until further discussion in the IMO Legal Committee and Basel Convention Open-ended Working Group); concepts of environmentally sound management in the context of ship dismantling; and prior informed consent (under the Basel Convention and other reporting systems) for consideration in the development at IMO of a reporting system as part of a mandatory instrument for ship recycling; and pre-cleaning and preparation of ships and its role in sustainable ship scrapping operations.

B. Conservation and management of marine living resources

1. Fishery resources

(a) FAO activities contributing to sustainable fisheries[171]

231. Issues highlighted by FAO include by-catches, impacts of subsidies in the fishing sector, the implementation of the FAO Compliance Agreement and the four international plans of action (IPOAs): IPOA-Capacity, IPOA-Sharks, IPOA-Seabirds and IPOA-IUU fishing, as well as the implementation of the strategy for improving information on status and trends of capture fisheries (Strategy-STF).

232. *Reduction of by-catch in marine capture fisheries*. Despite a significantly reduced rate of discards in the world's marine fisheries over the past decade, from 27 million tons annually to less than 7 million tons in 2005, by-catches continue to be a major problem in fisheries such as tropical shrimp fisheries. A Global Environment Facility-funded project is addressing this issue in 11 countries for which tropical shrimp fisheries are economically important. In 2005, national workshops on by-catch issues were also conducted in such countries as Colombia, Indonesia, Kuwait, Mexico and the Philippines and a regional workshop was held for countries which are members of the South-west Indian Ocean Fisheries Commission. In addition, an ICES/FAO working group was held in Rome in 2005 to review worldwide mitigation measures for by-catches in shrimp trawling.

233. *Subsidies*. In 2005, the twenty-sixth session of the Committee on Fisheries requested FAO to assess the impacts of subsidies on fishing capacity and IUU fishing on fisheries management generally. It supported the FAO future programme of work that would include a study on the role of subsidies in small-scale and artisanal fisheries in relation to other policy instruments. In addition, FAO provided technical and financial support in 2005 to the following activities related to subsidies: (a) Workshop on Strengthening the Capacity of African, Caribbean and Pacific Group of States secretariat staff in agricultural (including fisheries) trade negotiations (Geneva, May 2005); and (b) Second Workshop on fisheries subsidies of the Permanent Commission for the South Pacific (Ecuador, August 2005).

234. *Implementation of the FAO Compliance Agreement.* As of 31 December 2005, 31 States and the European Community were parties to the Compliance Agreement. In accordance with article VI of the Agreement, several parties have provided data to FAO on fishing vessels entitled to fly their flags, entered in their national records and authorized by them to fish on the high seas, for inclusion in the FAO database,[172] which currently contains 5,792 vessel entries. However, FAO notes that the rate of ratifications, accessions to and acceptances of the Compliance Agreement has been slow and it urges States to become parties to the Agreement as a means of enhancing the management of high seas fisheries and combating IUU fishing.

235. *Implementation of IPOAs.* In support of the IPOA-IUU fishing, the Committee on Fisheries requested States to take measures to combat IUU fishing, including seeking membership with the International Monitoring, Control and Surveillance Network for Fisheries-related Activities, phasing out subsidies that contribute to overcapacity and IUU fishing, strengthening port State measures and establishing a database for port State measures within FAO. As follow-up activities, FAO organized workshops in the Pacific Islands, West Africa and the Near East to assist countries elaborate national plans of action to combat IUU fishing (NPOA-IUU fishing) and disseminated a model NPOA-IUU fishing for the Pacific Islands.

236. In 2005, the implementation of IPOA-Capacity gained pace, with an increasing number of FAO members addressing the issue at the national and regional levels, including developing countries taking steps to manage capacity in small-scale fisheries, as well as with international financial institutions that have financed disinvestment in overexploited fisheries. Activities of FAO in this field include publication of technical reports on the measurement and management of fishing capacity, assistance to Member States and regional fisheries management organizations in Central America, eastern Africa and West Africa, and consideration of fishing capacity in the context of post-tsunami fleet rehabilitation and reconstruction. It is also involved in the implementation of a project on the "Management of tuna fishing capacity: conservation and socio-economics" as well as in the preparation of a conference to be held in 2006, entitled "Sharing the Fish '06", which will address workable and equitable allocation schemes.

237. A 2005 expert consultation, which assessed the effectiveness and achievements of IPOA-Sharks, concluded that despite the great benefit it could bring to the conservation of shark populations, its success had been constrained by the lack of priority given to the issue at the national and regional levels.

238. With respect to the implementation of IPOA-Birds, FAO indicated that significant problems of incidental catch of seabirds remained in a number of fisheries. It was assessing for future broader application the results of trial use in several countries of techniques to reduce the incidental catch of seabirds in longline fisheries. In 2005, FAO had updated a report on the mitigation of incidental catch of seabirds, including gillnet and trawl fisheries.

239. In implementation of the Strategy-STF, a project had been launched by FAO under its FishCode Programme to provide capacity-building in developing countries and foster regional cooperation. Activities under the project had begun in 2005 with the improvement of national/regional fisheries monitoring systems in South-east Asia and Central America and activities would be extended to other regions in the future.

(b) Activities of the World Bank and UNIDO in support of sustainable fisheries

240. World Bank financing for projects in the fishing sector, targeting sustainable fisheries, marine or brackish-water aquaculture, coastal and marine conservation and management is in the order of $950 million. In 2005, major activities included: (a) launching of the Global Partnership on Fisheries (PROFISH) as a programme in support of the FAO Code of Conduct for Responsible Fisheries in cooperation with global partners; (b) providing assistance to tsunami victims and promotion of more sustainable livelihoods for affected coastal and fishing communities; and (c) responding to developing countries' requests in sub-Saharan Africa and Latin America for assistance in restructuring their fisheries and aquaculture in response to deteriorating fish stocks and inadequate regulatory regimes. Financial assistance was provided to client countries through the following: (a) the International Development Association and the World Bank; (b) grants from the World Bank's internal resources (Development Grant Facility) and from trust funds; and (c) Development Policy Lending. Technical assistance is also routinely offered to regulatory agencies faced with fisheries management-related challenges.

241. The World Bank considers that the following fisheries issues require further attention from the international community: (a) strengthening governance and enforcement of relevant rules of international law and accepted practices in relation to illicit activities in the fishing sector which undermine the efforts of responsible users of fishery resources; (b) addressing growing poverty in fishing communities in developing countries and a growing fish food gap in sub-Saharan Africa; (c) focusing greater attention on the economic drivers of overfishing; and (d) addressing the increasing threats to coastal ecosystems, particularly coral reefs, from the cumulative effects of climate change and anthropogenic pressures.

242. UNIDO has provided technical assistance to developing countries towards reducing conflicts between industrial and artisanal fisheries, within its mandate to encourage sustainable industrial development in those countries. Such conflicts have increased in several developing countries, especially in West Africa, with the dominance of large foreign-owned demersal trawlers over small-scale local fleets in the inshore waters of some States. These issues assumed greater importance in 2005, with the convening of the NEPAD Fish for All Summit. UNIDO is currently implementing, in cooperation with the Global Environment Facility, UNEP and the World Wide Fund for Nature, a global project to investigate interactions between large commercial industrial and small-scale artisanal fisheries, identification of applied solutions to resolve any conflicts arising from such interactions and execution of specific activities and projects to demonstrate and prove the efficacy of solutions once implemented. In addition, UNIDO believes that further action is needed to build the capacity of developing countries to establish an effective monitoring control and surveillance system in order to assist in reducing conflicts between industrial and artisanal fisheries. Moreover, those countries need capacity-building in joint negotiations in fisheries exploitation rights with developed countries. They also need to conclude agreements at the regional level, with a view to establishing early combined recovery measures for depleted marine living resources.[173]

2. Marine biological diversity

243. During the reporting period, a number of international meetings addressed various issues relating to marine biological diversity (biodiversity), highlighting the important role for its conservation and sustainable use.

244. *Ad Hoc Open-ended Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction*. The Working Group met at United Nations Headquarters from 13 to 17 February 2006. Its report is contained in document A/61/65.

245. *Convention on Biological Diversity*. The eleventh meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-11, Montreal, Canada, 28 November-2 December 2005), under its agenda item on marine and coastal biological diversity, considered a study issued by the CBD secretariat on deep seabed genetic resources beyond the limits of national jurisdiction.[174] The discussions resulted in SBSTTA recommendation XI/8, which was discussed at the eighth meeting of the CBD Conference of the Parties (COP) (Curitiba, Brazil, 20-31 March 2006).[175] The eighth meeting of the CBD COP also considered a number of issues relating to marine and coastal biological diversity. The outcomes of the meeting will be reported in an addendum to the present report. The CBD secretariat published two new oceans-related CBD Technical Series: Technical Report No. 19 on the international legal regime of the high seas and the seabed beyond national jurisdiction and options for cooperation for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction; and Technical Report No. 20 on patterns of species richness in the high seas.[176]

246. *The Convention on the Conservation of Migratory Species of Wild Animals (CMS)* held its eighth Conference of the Parties (COP-8) in Nairobi from 20 to 25 November 2005. COP-8 was preceded by the 13th meeting of the CMS Scientific Council and the 29th meeting of the CMS Standing Committee. The Conference decided to add short-beaked common dolphin, basking shark and Atlantic sturgeon to annex I of the Convention, which requires strict protection measures for migratory species that are characterized as being in danger of extinction throughout all or a significant portion of their ranges. The basking shark and the Mediterranean populations of short-beaked and common dolphin and striped dolphin were also added to appendix II, which lists migratory species for which agreements for conservation and management are concluded, because of their unfavourable conservation status or because they would benefit significantly from international cooperation.

247. The Conference also adopted a number of resolutions or recommendations dealing with marine species. It discussed by-catch, inviting parties to endorse the FAO proposed Technical Guidelines on the Interaction between Sea Turtles and Fisheries and to implement the FAO International Plans of Action for reducing the impacts of longline fishing on seabirds and sharks. It also decided to appoint a Scientific Councillor with expertise in by-catch to coordinate the Scientific Committee's work in this field. The secretariat was requested to source funds for a study to assist developing countries to determine relative levels of by-catch in their fisheries.[177] Other measures addressed climate change and migratory species, by-catch, migratory sharks, adverse human-induced impacts on cetaceans, and marine

turtles.[178] It was noted that CMS should, where appropriate, cooperate with UNCLOS with respect to highly migratory marine species.[179]

248. *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. The Convention organized a workshop (Geneva, 30 November-2 December 2005)[180] to discuss issues relating to the definition of "introduction from the sea" under article 1 (e) of the Convention. These issues included the need to clarify the phrase "marine environment not under the jurisdiction of any State" and the phrase "transportation into a State". Participants agreed on the definition of the first phrase and recommended that work should continue on an agreed definition and process for "transportation into any State".[181]

249. Pursuant to decision 12.7 of the Conference of the Parties to CITES, the 53rd meeting of the CITES Standing Committee approved the draft text of a memorandum of understanding between FAO and CITES (Geneva, July 2005). The draft will be considered by the FAO Subcommittee on Fish Trade at its tenth session (Santiago de Compostela, Spain, 30 May-2 June 2006).

250. *Ramsar Convention on Wetlands*. The ninth meeting of the Conference of Parties (Kampala, 8-15 November 2005) adopted several decisions regarding the implementation of the Convention. In the Conceptual Framework for the wise use of wetlands and the maintenance of their ecological character (resolution IX.1, annex A), the definitions of "wise use" and "ecological character" were updated to take into account the Convention's mission statement, the terminology used in the Millennium Ecosystem Assessment and the concepts of the ecosystem approach and sustainable use applied by CBD. The Conference also approved changes to its Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance (resolution IX.1, annex B), which states that aquatic fauna and flora should be given more attention in the development of cases for Ramsar site designation. The Conference also welcomed the Scientific and Technical Review Panel's development of eight ecological outcome-oriented indicators for assessing the implementation of the Ramsar Convention and guidelines for the rapid assessment of coastal and marine wetland biodiversity (resolution IX.1, annex A). The Conference of the Parties adopted a comprehensive resolution on the conservation, production and sustainable use of fisheries resources (resolution IX.4). The resolution requests contracting parties to apply a set of recommendations concerning the management of sustainable fisheries in wetlands, prepared by the Scientific and Technical Review Panel. It also requests cooperation from fisheries authorities, encourages parties to engage in systematic collection of ecological and socio-economic data on fisheries and aquaculture of relevance to Ramsar sites and urges careful control of aquaculture and use of spatial planning approaches, where appropriate. The Conference resolved to strengthen its partnership building with CBD, with the goal of ensuring that the identification and designation of Ramsar sites is integrated into the Jakarta Mandate's programme of work on coastal and marine biodiversity (resolution IX.22).

251. *Antarctic Treaty*. The Government of Sweden hosted the 28th Antarctic Treaty Consultative Meeting, which took place in Stockholm from 6 to 17 June 2005. The meeting adopted Measure 1 (2005) to annex VI to the Protocol on Environmental Protection to the Antarctic Treaty ("Liability arising from environmental emergencies"). During the meeting, there were wide-ranging discussions on biological prospecting, and papers were presented on various aspects of the issue.

One paper highlighted developments in five international forums, including the establishment by the United Nations General Assembly of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and the work of the Ad Hoc Open-ended Working Group on Access and Benefit-sharing of CBD. Nonetheless, it was felt that it was important for the Antarctic Treaty System to take the lead on the question of biological prospecting in Antarctica. As a result, a resolution was adopted recommending that Governments draw to the attention of their national Antarctic programmes and any other research institutes that might be engaged in biological prospecting in the Antarctic, article III (1) of the Antarctic Treaty. That article provided that, to the greatest extent feasible and practicable, information regarding plans for scientific programmes in Antarctica should be exchanged and scientific observations and results should be made freely available. The resolution also recommended that Governments keep the issue of biological prospecting in Antarctica under review (resolution 7 (2005)).[182]

252. *Coral reefs*. The International Coral Reef Initiative General Meeting (Koror, 31 October-2 November 2005) confirmed the adoption of a resolution on artificial coral reef restoration and rehabilitation, which had been tabled at the International Coral Reef Initiative General Meeting, held in the Seychelles, and adopted by the International Coral Reef Initiative Forum in April 2005. The resolution notes that artificial rehabilitation and restoration of coral reefs can sometimes be appropriate, but that artificial systems cannot replace and do not work as effectively as a natural coral reef. It establishes an ad hoc committee to examine the issue and requests the International Society for Reef Studies to prepare a discussion paper on the topic in consultation with other relevant organizations. The ad hoc Committee on Cold Water Corals reported that its establishment in April 2005 had contributed to increased focus and activity on the sustainable management of cold-water corals and related ecosystems. A new ad hoc Committee on Enforcement and Natural Resource Investigations in Coral Reef and Associated Ecosystems was established. The meeting also discussed the Initiative's engagement with a number of other international environment processes, for example CBD, and ways to ensure that coral reef issues were emphasized in those processes. The meeting discussed the post-tsunami situation, including the damage to coral reefs, the role that the Initiative played in the research and assessment in the wake of the tsunami and the ways in which reconstruction efforts might threaten coral reef recovery. Donors were encouraged to ensure that environmental best practices were written into funding contracts.[183]

253. Recognizing that coral reefs are under threat worldwide, but that improved management is hampered by critical gaps in scientific understanding, the United Nations University's International Network on Water, Environment and Health (UNU-INWEH) is executing a major "reef connectivity" project as part of a Global Environment Facility-World Bank global programme for targeted coral reef research. Initial work under the project has focused on fishery management in and around coral reefs. It was found that while no-take fishery reserves are likely to be a protective management tool that enhances yields, there are crucial gaps in knowledge that impede their effective use. Current effort within the project centres on the development of novel techniques for measuring connectivity among populations of coral reef organisms and application of those techniques in specific

demonstration projects that aim to measure connectivity quantitatively for the first time.

3. Marine protected areas

254. Marine protected areas are an important tool for implementing the principles of the ecosystem approach and in promoting conservation and sustainable use of the marine and coastal environment. They provide protection of ecosystems, natural habitats and species, allowing natural recovery of degraded resources, and provide a unique method to maintain marine ecosystems in a truly natural state. In this context, the UNEP Coral Reef Unit is working together with the UNEP Regional Seas Programme, the International Coral Reef Initiative, Initiative members and private/public partnerships to prevent the further degradation of coral reefs, inter alia, by supporting national and regional activities to establish and improve marine and coastal protected area networks.[184]

255. UNEP/Regional Seas Programme and CBD, in partnership with ICRAN and IOC, have initiated a joint project to analyse the current status of network development of marine and coastal protected areas at the regional level[185] and the role of the UNEP/Regional Seas Programme, to identify gaps in network establishment and plans to meet the international targets set by the World Summit on Sustainable Development and CBD on the establishment of a global representative network of such areas by 2012. The study will provide recommendations for improving marine and coastal protected area networks at the regional level, with specific focus on the possibilities within and added value of the UNEP/Regional Seas Programme. In addition, UNEP, CBD, the Nairobi Convention and IUCN East Africa are jointly developing training programmes in the East Africa region for introducing and using the Training Toolkit for the Western Indian Ocean, "Managing Marine Protected Areas".

256. The International Marine Protected Areas Conference (IMPAC1, Geelong, Australia, October 2005) met in order to facilitate the sharing of experiences and best practices regarding marine protected areas. A number of panels addressed various themes relating to the establishment and management of marine protected areas, including the development of networks of such areas, sustainability and resilience, ecosystem processes, management effectiveness and shared stewardship. Cross-cutting issues included those relating to indigenous people and local communities, fisheries, socio-economic issues and the high seas. The outcomes of the meeting will be made available through the Proceedings of the Conference.[186]

257. In December 2005, the Government of Canada hosted a workshop aimed at developing a set of scientifically rigorous ecological criteria for the identification of potential sites for enhanced protection in marine areas beyond the limits of national jurisdiction. The workshop focused on criteria for identifying ecologically or biologically significant areas. The workshop was organized in order to support the work of a number of international processes, including the Ad Hoc Open-ended Informal Working Group to study issues related to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.

C. Climate change[187]

258. Some climatologists have noted that the highest global annual average surface temperature in more than a century was recorded in their analysis for the 2005 calendar year.[188] This rise in temperature has been responsible for the recent melting of ice sheets in the Arctic and Antarctic. A recent report indicates that the extent of sea ice cover in the Arctic Ocean is now at its lowest level in more than a century.[189] Another recent study concluded that the loss of ice from Greenland glaciers doubled from 1996 to 2005, as the glaciers flowed faster into the ocean in response to a warmer climate.[190] These changes are widespread and are progressively affecting the entire ice sheet and increasing its contribution to global sea-level rise.

259. In addition to a rise in sea level, this massive influx of warmer fresh water in the areas south of Greenland could contribute to a further weakening of the Gulf Stream. Researchers have found that the strength of the current that warms north-western Europe has diminished by 30 per cent in the past 12 years. The current is like an oceanic conveyor belt that transports heat from equatorial regions towards the Arctic circle. Warm surface water from the tropics releases heat as it moves north, until it cools so close to the Greenland coast that it sinks and circulates back south. There, it warms again and resumes its northward journey. Global warming weakens the circulation, because the increase in melting fresh water from Arctic ice sheets decreases the salinity of the ocean water, which renders it lighter and less able to sink and then return to the south.[191]

260. In addition, research has led to speculation as to whether the Arctic is headed towards a fundamentally different climatic regime: one with much less snow and sea ice, and which leads to changes in biodiversity and impacts local communities.[192]

261. The National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center in the United States Department of Commerce announced on 2 February 2006 the official return of La Niña, the periodic cooling of ocean waters in the east-central equatorial Pacific, which can impact the typical alignment of weather patterns around the globe. It is estimated that the La Niña event will continue for the next three to six months.[193] La Niña impacts during the Northern Hemisphere winter typically include enhanced rainfall across Indonesia and northern Australia, as well as in the Amazon Basin and in south-eastern Africa, and below-average rainfall across the eastern half of the equatorial Pacific and eastern equatorial Africa. Although La Niña usually causes increased Atlantic hurricane activity, it is too early to predict the effects of this La Niña event. La Niña events recur approximately every three to five years.

262. *United Nations Framework Convention on Climate Change and Kyoto Protocol*. Canada hosted the first Meeting of the Parties to the Kyoto Protocol in Montreal from 28 November to 9 December 2005, in conjunction with the eleventh meeting of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP-11). It is estimated that about 10,000 participants attended the meetings. Both meetings attracted wide business interest owing to two operational trading systems, that is, the pan-European emissions trading scheme and the Clean Development Mechanism, tools to promote sustainable development and combat climate change. COP-11 closed with the adoption of more than 40 decisions that will strengthen global efforts to combat climate change. Moreover, under the Convention, a dialogue was launched on

strategic approaches for long-term global cooperative action to address climate change. A series of workshops is planned to develop the broad range of actions needed to respond to the climate change challenge. The process for discussion of future commitments beyond 2012 was initiated. Lastly, the "rulebook" of the 1997 Protocol was adopted, setting the framework for the implementation of the Protocol. A new working group, due to commence work in 2006, was established to discuss Asia-Pacific economic cooperation (future commitments for developed countries for the period after 2012).

263. The first meeting of the Kyoto Protocol's Joint Implementation Supervisory Board took place in Bonn, Germany, on 2 and 3 February 2006. The Board is one of the three mechanisms established under the Protocol to achieve reductions in emissions and help tackle climate change. It allows industrialized countries to implement projects that reduce emissions or increase removals using sinks in other industrialized countries. Board projects are most likely to be carried out in central and eastern European economies in transition, where there is more scope for cutting emissions at lower costs than in the West.

264. *United Nations Environment Programme*. As part of an effort to address the impacts of global warming on vulnerable areas from the Arctic to the Himalayas to low-lying islands, UNEP announced on 6 December 2005 the first case of a small island community to be formally moved out of danger owing to climate change. A hundred villagers were relocated to the interior of Tegua in the South Pacific island chain of Vanuatu after their coastal homes had been repeatedly swamped by storm surges and waves linked to climate change. The relocation took place under the "Capacity-building for the Development of Adaptation in Pacific Island Countries" project.

D. Ocean noise

265. There is increasing concern among scientists and conservationists that noise pollution poses a significant and, at worst, lethal threat to whales and dolphins and other marine wildlife, including fish. Little is known about the effects of ocean noise on human beings, for example, divers. Ships are the biggest source of ocean noise; other sources include oil and gas exploration, seismic surveys, ocean experiments, military sources, acoustic harassment devices, dredging and marine wind farms.[194] The impact of noise on various species of whales was addressed in a recent report published by the Convention on the Conservation of Migratory Species and Wild Animals.[195]

266. In paragraph 84 of its resolution 60/30, the General Assembly encourages further studies and consideration of the impacts of ocean noise on marine living resources. The issue of ocean noise has been raised in other international forums in recent years, including at the sixth meeting of the United Nations Open-ended Informed Consultative Process on Oceans and the Law of the Sea.[196] The Scientific Committee of the International Whaling Commission (IWC) has identified ocean noise as an environmental concern for several populations of whales. In its resolution 2005-3 on the Western North Pacific Gray Whale, IWC calls for organizations concerned with oil and gas projects to take all practicable measures to ensure that received noise levels in the Piltun feeding ground are reduced to a minimum and are in accordance with any future recommendations of the IWC

Scientific Committee.[197] The European Parliament adopted a resolution that calls for a moratorium on the deployment of high-intensity naval sonars until an overall assessment of the cumulative environmental impact on marine mammals and fish and other marine life has been completed.[198] Furthermore, the parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) adopted a resolution urging parties and non-parties to avoid any use of man-made noise in habitat of vulnerable species and in areas where marine mammals or endangered species may be concentrated in the ACCOBAMS area. The resolution instructs the Scientific Committee to prepare a set of guidelines on conducting activities known to produce underwater sound with the potential to cause adverse effects on cetaceans.[199] The Third Meeting of the Scientific Committee (Cairo, 15-17 May 2005) began work on these issues.

XII. Indian Ocean tsunami

267. On 26 December 2004, a devastating tsunami[200] flooded vast expanses of coastal areas in countries all around the Indian Ocean rim from Indonesia to Somalia, including India, Kenya, Madagascar, Malaysia, the Maldives, Myanmar, the Seychelles, Sri Lanka, Thailand and the United Republic of Tanzania. It killed over 200,000 people[201] and displaced some 1.5 million.[202] The tsunami destroyed fisheries for coastal communities, damaged maritime infrastructure and, by the wave of deposits and debris it generated, also damaged coral reefs, seagrass beds, mangroves and associated ecosystems.[203] One year later, the devastating impact of the tsunami is still visible, but reconstruction efforts are also making progress.[204] The international community responded, generously allowing the United Nations to meet, within a month, its $977 million aid appeal for disaster relief. One year later, 75 per cent of the $10.5 billion pledged for reconstruction of tsunami-affected countries has been secured.

268. *Central Emergency Revolving Fund (CERF) or Global Emergency Fund.* The tsunami crisis demonstrated how generous Governments, corporations and the public could be. However, the scale of the devastation and its abruptness emphasized the need for preparedness and this prompted the United Nations General Assembly to establish a $500 million Global Emergency Fund to jumpstart relief operations within 72 hours of a crisis.[205] About $200 million has already been pledged for the Fund.[206] The new Central Emergency Revolving Fund has three objectives: (a) promote early action and response to save lives; (b) enhance response to time-crucial requirements based on demonstrable needs; and (c) strengthen core elements of humanitarian response in underfunded crises.

269. *Reconstruction.* One year after the tsunami, the emergency phase has given way to the process of reconstruction. The progress report on relief and reconstruction is mixed.[207] Despite the lack of coordination in some areas,[208] rebuilding is being carried out at a dynamic pace in most areas hit by the tsunami. Hard-hit places like Aceh and Nias in Indonesia are experiencing a construction boom which could result in opportunities for the poorest with the right training and enhanced local production of materials.[209] However, in some areas, the largest impediment to permanent housing has been the question of whether to allow people to return to the edge of the sea.[210] In the Maldives, Phuket, Thailand, and Sri Lanka, the tourism industry, which is mostly associated with beach resorts, is recovering steadily.[211] Fisheries communities in Sri Lanka and Indonesia have received

generous donations of boats. FAO is assisting those communities by providing engines and gear, which are often overlooked by those providing boats, while representing around 40 per cent of the cost. In Indonesia, FAO has trained 140 boatbuilders and is setting vessel safety standards and establishing vessel registration systems. However, FAO, which is responsible for the overall coordination of fisheries sector rehabilitation in Sri Lanka and Indonesia, has cautioned against the danger of building up excess fishing capacity and the potential environmental risks from inappropriate boats and gear. In the year since the tsunami struck, the World Wildlife Federation has been working to assess the environmental damage and rehabilitate natural coastal defences, such as coral reefs and mangroves. It is also developing a plan to introduce state-of-the-art aquaculture techniques to shrimp farms in India, Indonesia, Sri Lanka and Thailand. In early 2006, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) started a programme on the development of pilot projects on "Building community resilience to natural disasters through partnerships: sharing experience and expertise in the region" in India, Indonesia, Maldives and Sri Lanka.[212]

270. *Early warning systems*. Early warning systems have been in place in the Pacific region for over 40 years, coordinated by IOC. They include seismological and oceanic observation networks, regional analysis and advisory centres and national tsunami centres linked to national risk assessment and preparedness activities.[213] Immediately following the tsunami, IOC, in cooperation with the Pacific Tsunami Warning Center of the United States of America and the Japan Meteorological Agency established an interim tsunami advisory information system.[214] In addition, on 15 November 2005, the initial phase of an early warning system was activated off the coast of Sumatra, Indonesia. Two sets of moored surface buoys and pressure sensors on the ocean floor were installed as part of a nationwide system that will ultimately include 15 buoys and about 100 sensors along Indonesian coasts. The sensors detect tremors or earthquakes on the ocean floor and transmit the information to the buoys where it is then uplinked by satellite to a monitoring station. All participating countries except Somalia receive international tsunami warnings from the Pacific Tsunami Warning Center and the Japan Meteorological Agency. These warnings are received at facilities with back-up systems that operate 24 hours a day, 7 days a week.

271. In December 2005, the fourth session of the IOC Regional Committee for the Central Indian Ocean was held in Colombo. Ten countries participated and agreed to priority actions for the region in terms of ocean science, services and observation, including capacity-building activities to strengthen the participation of countries in the Indian Ocean Tsunami Warning System.[215] Most countries in the Indian Ocean have established or strengthened their disaster management laws, national platforms and national and local coordination mechanisms to guide all-hazard disaster risk reduction and to establish clearer responsibilities for end-to-end early warning systems. However, not all have specifically addressed the question of national coordination. In an effort to contribute to the integration of tsunami early warning systems into the regional socio-economic development process, ESCAP launched a regional voluntary trust fund for the development of multihazard early warning systems in the Indian Ocean and South-east Asia. Thailand and India have set up tsunami warning centres to field information. Seismic monitoring stations have been overhauled with new computers and communications equipment to measure the strength of underwater quakes and assess the tsunami threat quickly. According to

UNESCO, a tsunami early warning system in the Indian Ocean should be ready for installation in mid-2006. The intent is to prepare every country's weather service to receive updates and warnings on a range of climate and weather shifts within two minutes of their occurrence.[216]

XIII. Settlement of disputes

272. UNCLOS provides for four alternative forums for the settlement of disputes: the International Tribunal for the Law of the Sea, the International Court of Justice (ICJ), an arbitral tribunal constituted in accordance with annex VII to UNCLOS or a special arbitral tribunal constituted in accordance with annex VIII to UNCLOS. Parties may choose one or more of those forums by written declaration made under article 287 of UNCLOS, which is deposited with the Secretary-General of the United Nations.

A. International Court of Justice[217]

273. Cases still pending before the Court and of relevance to law of the sea matters are: *Territorial and Maritime Dispute (Nicaragua v Colombia); Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v Honduras);* and *Maritime Delimitation in the Black Sea (Romania v Ukraine).* Those cases may be consulted on the website of the International Court of Justice,[218] as well as in the reports of the Court to the General Assembly at its sixtieth session.[219]

B. International Tribunal for the Law of the Sea[220]

274. *Conservation and Sustainable Exploitation of Swordfish Stocks in the South-eastern Pacific Ocean (Chile/European Community).* By letters dated 1 and 5 December 2005, respectively, Chile and the European Community requested that the time limits for the proceedings before the Special Chamber should continue to be suspended for a further period of two years and maintained their rights to revive the proceedings at any time. On 28 and 29 December 2005, the Special Chamber held deliberations in order to consider the request of the parties. After consultations between the President of the Special Chamber and the agents of the parties, the parties provided the Special Chamber with additional information in support of their request. Consequently, by order dated 29 December 2005, the Special Chamber extended the time limit for making preliminary objections to 1 January 2008 and maintained the rights of the parties to revive the proceedings at any time.[221]

C. Court of Justice of the European Communities[222]

275. *Opinion concerning Case C-459/03 (Commission of the European Communities v Ireland).* On 18 January 2006, the Advocate General, Poiares Maduro, issued an opinion on the proceedings instituted by the Commission against Ireland concerning Ireland's suit against the United Kingdom (*Mox Plant Case* before an annex VII Tribunal under part XV of UNCLOS).[223] Although an Advocate-General's opinion is not binding on the Court of Justice of the European

Communities, it is usually followed. Ireland had commenced proceedings against the United Kingdom in 2001. On 20 June 2002, a meeting was held between Ireland and the Commission concerning the Mox Plant dispute. On 15 May 2003, the Commission notified Ireland that it was in breach of its obligations under articles 10 and 292 of the European Communities Treaty and articles 192 and 193 of the Euratom Treaty. In an exchange of correspondence, Ireland disagreed with the position of the Commission. On 15 October 2003, the Commission brought the matter before the Court of Justice. The Commission argued that Ireland had not given full weight to the fact that the European Community was a party to UNCLOS and that the provisions of UNCLOS were part of Community law. In consequence, Ireland had violated its duty of cooperation and the exclusive jurisdiction of the Court of Justice in such cases by instituting proceedings before another tribunal. A final ruling by the Court is expected sometime in 2006. Proceedings before the UNCLOS Tribunal have been suspended pending the outcome at the Court of Justice of the European Communities.

XIV. International cooperation and coordination

A. United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

276. At its sixtieth session, the United Nations General Assembly, in accordance with resolution 57/141, reviewed for the second time the effectiveness and utility of the Informal Consultative Process. By paragraph 99 of its resolution 60/30, the Assembly decided to continue with the Process for the next three years and further review its effectiveness and utility at the sixty-third session. In addition, in paragraph 101, the Assembly requested the Secretary-General to convene the seventh meeting of the Process from 12 to 16 June 2006. The seventh meeting will focus its deliberations on "Ecosystem approaches and oceans". Lastly, the President of the Assembly, following the appropriate consultations with Member States, reappointed Cristián Maquieria (Chile) and appointed Lori Ridgeway (Canada) as co-chairs of the seventh meeting.

B. Regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects

277. In paragraph 89 of its resolution 60/30, the General Assembly endorsed the conclusions of the second International Workshop on the regular process.[224] In paragraph 90, it launched the start-up phase, the "assessment of assessments", to be completed within two years. In paragraph 91, it also authorized organizational arrangements, including an ad hoc steering group to oversee the execution of the "assessment of assessments", two United Nations agencies, UNEP and IOC, to co-lead the process, and a group of experts to undertake the actual work of assessing the various assessments. In addition, in paragraph 96, the Assembly decided that the start-up phase would be financed through voluntary contributions and other resources available to participating organizations and bodies. The ad hoc steering group is expected to hold its first meeting in early June 2006.

C. UN-Oceans

278. The third meeting of UN-Oceans, the United Nations inter-agency coordination mechanism on oceans and coastal issues, was held at UNESCO/IOC headquarters in Paris on 23 January 2006. It was attended by representatives from CBD, IAEA, IMO, IOC, the Department of Economic and Social Affairs in the United Nations Secretariat, the Division for Ocean Affairs and the Law of the Sea in the United Nations Secretariat, UNDP, UNEP, UNEP/GPA and the World Bank (FAO was only able to be in attendance for part of the meeting). The meeting reviewed the "Guiding Principles for Charting Environmentally Sound Coastal Rehabilitation", prepared by UNEP/GPA through the UN-Oceans Task Force on Post-tsunami Response. UN-Oceans expressed its support for the implementation of the Guiding Principles. As for the terms of reference of the proposed joint UN-Oceans and UN-Water Task Force on the Second Intergovernmental Review of GPA, it was agreed that they would be revised and circulated among UN-Oceans members of both groups with a view to their approval. FAO made a presentation on the United Nations Atlas of the Oceans and IAEA, IMO, IOC, the Department of Economic and Social Affairs, the Division for Ocean Affairs and the Law of the Sea in the United Nations Secretariat and UNEP indicated their respective intentions to seek financial support for the Atlas. The meeting was informed that a presentation on UN-Oceans and the Atlas to the United Nations High-level Committee on Programmes was being planned for 1 March 2006. Lastly, the meeting was briefed on the latest developments regarding the regular process (formerly GMA), the UN-Oceans Task Force on Biodiversity in Marine Areas beyond National Jurisdiction and the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection.

XV. Conclusions

279. It follows from the report that although a wide range of actions have been taken to address the multifaceted issues related to ocean affairs and the law of the sea during the period under review, much more remains to be done in order to translate the objectives of UNCLOS and other international legal instruments into concrete action. Past reports have included some suggestions on how to achieve these objectives. The present report has highlighted three areas requiring particular attention: the deposit of charts or of lists of geographical coordinates of points; ecosystem approaches and oceans; and maritime security and safety.

280. In light of recent developments with regard to various uses of the sea and its resources, the deposit of charts or of lists of geographical coordinates of points with the Secretary-General of the United Nations becomes an increasingly important tool for providing adequate information to the international community and users of the seas regarding the outer limits of maritime zones of coastal States, the lines of maritime boundaries delimitation, as well as baselines. The deposit, which is an international act required by UNCLOS, is also in the best interests of coastal States. Making information on the outer limits of maritime zones, delimitations and baselines available helps to safeguard the rights of coastal States in the zones under their national jurisdiction and facilitates the exercise of such jurisdiction. It is therefore important that coastal States parties respond to the call made by the

General Assembly in paragraph 6 of its resolution 60/30 and proceed with such a deposit, if they have not already done so, as soon as possible.

281. The application of ecosystem approaches to ocean management is important for the achievement of sustainable development. The common denominator for ecosystem approaches is that they are a comprehensive and science-based approach for the conservation and management of natural resources. They build on the concept of integrated ocean management, which involves comprehensive planning and regulation of human activities towards a complex set of interacting objectives and aims at minimizing user conflicts while ensuring longer-term sustainability. Adopting and implementing an ecosystem approach should therefore be considered an evolutionary step. Increased focus should be placed on ways to facilitate its implementation both at the regional and national levels. Because ecosystems do not respect maritime boundaries, regional cooperation is essential. As the scientific understanding of ocean ecosystems is still very limited, further research is needed as well as the application of the precautionary approach in the face of uncertainty.

282. In the context of fisheries management, an ecosystem approach requires, in particular, the use of the best scientific evidence available for the conservation and management of marine living resources. It also requires improved monitoring, not only of the status and trends of the fisheries, but also of the status of key environmental factors, habitats, endangered species and non-target and dependent species associated with the target species. The ecosystem approach should reflect due concern about the long-term effects of fishery management on marine ecosystems by restricting the environmental impacts of fishing to acceptable levels, including by reducing by-catch and incidental mortality of non-target species.

283. Stronger capacity-building efforts are crucial to the effective management of resources and protection of the marine environment and ecosystems by developing countries, in particular small island developing States.

284. Another important area where cooperation is of vital importance is maritime security and safety. Creating the conditions that enable the safe and efficient navigation of ships through the world's oceans is essential for global trade. As today's challenges to maritime security are wide-ranging, global in scope and often connected, cooperation on all threats to security issues is crucial for their prevention and suppression as well as for safety of navigation. It is therefore important to intensify cooperation at all levels to address threats to maritime security and safety in a comprehensive manner through bilateral and multilateral instruments and mechanisms aimed at monitoring, preventing and responding to such threats, as also stated by the General Assembly in paragraph 50 of its resolution 60/30.

Notes

[1] See ISBA/10/C/WP.1.

[2] See ISBA/11/C/5.

[3] See ISBA/11/C/10.

[4] For more information, see Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission — sixteenth session (CLCS/48).

[5] Further information on the fellowship, including application forms and the list of participating universities can be found on the Division for Ocean Affairs and the Law of the Sea website at www.un.org/depts/los.

[6] Further information, including the past fellows' research papers, application files and an up-to-date list of participating institutions, is available on the Division for Ocean Affairs and the Law of the Sea website at www.un.org/depts/los under the link "Technical Cooperation Trust Fund — United Nations and the Nippon Foundation of Japan".

[7] For information regarding the first and the second training courses, see A/60/63, para. 49, and A/60/63/Add.2, para. 110, respectively.

[8] An independent panel of experts makes recommendations to the Division regarding the amount of financial assistance to be given to a State from the trust fund. The current members of the panel are as follows: the Permanent Representatives of Mexico, Norway, Papua New Guinea and Senegal; the Deputy Permanent Representatives of Japan and the Russian Federation; and the Law of the Sea Director, Department of Foreign Affairs of Ireland.

[9] For further information on the activities of the fund, see document A/CONF/210/2006/2.

[10] See World Maritime Day 2005, IMO circular letter No. 2660 of August 2005.

[11] Africa's share of world exports was 8.6 per cent, the Americas 21.4 per cent, Asia 38.4 per cent, Europe 22.7 per cent and Oceania 8.9 per cent. *Review of Maritime Transport 2005* (United Nations publication, Sales No. E.05.II.D.14), p. 4.

[12] Ibid., p. 19. General cargo vessels had the highest average age (17.5 years) and container vessels the lowest (9.4 years).

[13] Ibid., p. 26. The fleets of developing countries of Africa decreased marginally, while modest gains were recorded by the fleets of developing countries in America, Europe and Oceania. The fleets of the socialist countries in Asia expanded, whereas those of the countries of central and eastern Europe contracted.

[14] M. Gianni and W. Simpson, *The Changing Nature of High Seas Fishing*, available at: www.wwf.org.au/publications/IUU_ChangingNatureOfHighSeasFishing/.

[15] IAEA General Conference resolution GC(49)/RES/9, "Measures to strengthen international cooperation in nuclear, radiation and transport safety and waste management", section B on "Transport safety".

[16] Ibid., preambular paragraph (j).

[17] IAEA International Conference on the Safety of Transport of Radioactive Material, Vienna, 7-11 July 2003.

[18] A/60/63, para. 74.

[19] Resolution 60/1, para. 56 (o).

[20] A/CONF.207/11, chap. I, resolution 1, annex II.

[21] The action areas include reviewing and revising the IAEA Regulations for the Safe Transport of Radioactive Material, refining the review process, compliance and quality assurance, denial of shipments, emergency response, liability and communication.

[22] Difficulties encountered in the shipment of the IMDG Code class 7 radioactive materials. Submission by Canada and the United Kingdom to the IMO Assembly (IMO document A.24/13/1, paras. 7-9).

[23] See IMO Assembly resolution A.984(24) "Facilitation of the carriage of the IMDG Code class 7 radioactive materials, including those in packaged form used in medical or public health applications". The Assembly also noted in the resolution that the ultimate desired goal of small island developing States and some other countries was the cessation of the transport of radioactive materials through the regions of such States, with the exception of those materials used in medical or public health applications, and recognized the right of freedom of navigation in accordance with international law. The delegation of India reserved its position with regard to the approval of an Assembly resolution for the general transport of all IMDG Code class 7 radioactive materials. It would have preferred a resolution focused exclusively on radioactive materials used for medical or public health applications (IMO document A 24/5(b)/2, para. 81).

[24] IAEA General Conference resolution GC(49)/RES/9, "Measures to strengthen international cooperation in nuclear, radiation and transport safety and waste management", section B on "Transport safety", para. 12.

[25] Declaration of Panama adopted at the Fourth Summit of Heads of States and/or Government, Panama City, Panama, 29 July 2005.

[26] Communiqué of the 36th Pacific Islands Forum, Papua New Guinea, 25-27 October 2005. Document PIFS(05)12, para. 19g, available at www.sidsnet.org/pacific/forumsec. See also past reports of the Secretary-General on oceans and the law of the sea.

[27] See A/60/PV.54-56.

[28] A/60/529, annex I.

[29] Ibid., annex II.

[30] IMO document C/ES.23/13, para. 17.

[31] See the press release of the Paris memorandum of understanding, "Changing course", 27 July 2005, available at www.parismou.org.

[32] One of the projects to address ferry safety is the pilot project in Bangladesh, under the IMO technical cooperation programme; see the IMO press release "IMO and Interferry sign agreement on ferry safety", 24 January 2004, available at www.imo.org.

[33] See the press release, "ILO to adopt 'bill of rights' for seafarers", 6 February 2006, available at www.ilo.org.

[34] The Paris memorandum of understanding on port State control conducted a concentrated inspection campaign to verify compliance with ILO standards in the last quarter of 2004. More than 40 per cent of the ships inspected had deficiencies in at least one of the selected inspection areas and a total of 21 ships were detained. Most deficiencies were found in areas of food storage, conditions of the galley, sanitary facilities and hospital accommodations. In almost 50 per cent of all inspections, deficiencies were found relating to working arrangements. See website of the Paris memorandum of understanding at www.parismou.org.

[35] Ships of 500 gross tonnage and above engaged in international voyages or voyages between foreign ports.

[36] See the report of the sixth session of the Joint IMO/ILO Ad Hoc Expert Working Group on Liability and Compensation regarding Claims for Death, Personal Injury and Abandonment of Seafarers, report of the Joint Working Group document IMO/ILO/WGLCCS 6/6.

[37] Counting only those who have lived outside their country for more than one year and including 9.2 million refugees. Almost half of the world's international migrants are women. Migrants can be regular or irregular, skilled or unskilled, students, family reunion migrants, transit migrants, asylum-seekers or refugees. "Migration in an interconnected world: New directions for action". Report of the Global Commission on International Migration, October 2005. Introduction, paras. 13-14. The report is available at www.gcim.org.

[38] Ibid., annex II.

[39] During the second half of 2005, only Greece and Italy submitted reports. "Unsafe practices associated with the trafficking or transport of migrants by sea". First biannual report. Document MSC.3/Circ.10, available on the website of IMO at www.imo.org.

[40] "Migration in an interconnected world: New directions for action". Report of the Commission on International Migration, October 2005, chap. III, paras. 6-9.

[41] Ibid., para. 5.

[42] Review of the implementation of the Protocol against the Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime: draft report. Document CTOC/COP/2005/L.1/Add.5.

[43] Draft provisional agenda and proposed organization of work for the third session of the Conference of the Parties to the United Nations Convention against Transnational Organized Crime and draft questionnaire on the implementation of the Protocol against the Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime. Documents CTOC/COP/2005/L.11 and CTOC/COP/2005/L.9.

[44] General Assembly resolution 60/1, para. 7.

[45] The launch of the Ocean Security Initiative: "Sustainable Management of Oceans and Coastal Resources as a Tool for Security". ACOPS concept paper prepared for the First Conference of the Ocean Security Initiative, Tripoli, 23-25 July 2005, available at www.acops.org.

[46] The Symposium on Maritime Security in the South China Sea, Haikou City, Hainan Province, China, was held on 8 and 9 December 2005. It was organized along five panels: 1. World economy and navigation security of the South China Sea; 2. Malacca Strait and the South China Sea sea lane; 3. Maritime security and law enforcement in the South China Sea; 4. Maritime terrorism, piracy and regional cooperation mechanism; and 5. Precaution and prevention of oil spills in the South China Sea area.

[47] The Ministerial Conference on International Transport Security was held in Tokyo on 12 and 13 January 2006 and was attended by the Ministers responsible for transport security of Australia, Canada, China, France, Germany, Indonesia, Italy, Japan, the Republic of Korea, Malaysia, the Russian Federation, Singapore, the United Kingdom and the United States and by representatives of the European Commission, the International Civil Aviation Organization, IMO and the World Customs Organization. See IMO document MSC.81/5/9.

[48] See the full citation of the document in the chapter on shipping (A/60/529, annex I and annex II, para. 5).

[49] A/60/529, annex II.

[50] Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf, IMO documents LEG/CONF.15/21 and LEG/CONF.15/22.

[51] Maritime Training Programmes: Note by the Secretary-General. IMO document A.24/17(d).Rev.1.

[52] This matter was considered also at the Intersessional MSC Working Group on Long-Range Identification and Tracking, first session, 17-19 October 2005.

[53] See MSC.4/Circ.69, MSC.4/Circ.72, MSC.4/Circ.76, MSC.4/Circ.77, MSC.4/Circ.78, MSC.4/Circ.79.

[54] ICC International Maritime Bureau: Annual report of incidents of piracy and armed robbery against ships (1 January-31 December 2005).

[55] Piracy and armed robbery against ships in waters off the coast of Somalia: Note by the Secretary-General of IMO. IMO document C/ES.23/17(a).

[57] Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management (1996), available at www.csus.edu/indiv/m/merzj/course1/handouts/ECosystemmanagement

[58] H. Wang, "Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics", *Ocean Development and International Law*, vol. 35 (1), 2004, pp. 41-74.

[59] Ibid.

[60] H. Wang, op. cit., p. 47.

[61] Statement on the ecosystem approach to the management of human activities, First Joint Ministerial Meeting of the Helsinki and OSPAR Commissions, Bremen, Germany, 25-26 June 2003.

[62] Report of the Expert Consultation on Ecosystem-based Fisheries Management, held in Reykjavik from 16 to 19 September 2002.

[63] H. Wang, op. cit., p. 42.

[64] Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: A Framework for Assessment*, p. 71.

[65] H. Wang, op. cit., p. 42.

[66] See reports of the Secretary-General of the United Nation A/58/65, A/59/62/Add.1 and A/60/63/Add.1.

[67] S. M. Garcia, A. Zerbi, C. Aliaume, T. Do Chi and G. Lasserre, "The ecosystem approach to fisheries: issues, terminology, principles, institutional foundations, implementation and outlook", FAO Fisheries Technical Paper, No. 443 (2003), p. 7.

[68] The Ramsar Convention on Wetlands, Strategic approaches to freshwater management: Background paper — The ecosystem approach.

[69] Report of the Expert Consultation on Ecosystem-based Fisheries Management, held in Reykjavik from 16 to 19 September 2002.

[70] Guidance on the Application of the Ecosystem Approach to Management of Human Activities in the European Marine Environment, ICES Cooperative Research Report, No. 273 (2005), p. 2.

[71] UNCLOS, art. 61 (3) and (4) and art. 119 (1 (a) and (b)).

[72] Ibid., art. 194 (5).

[73] Ibid., art. 211 (6 (a)).

[74] Ibid., art. 145 (b).

[75] Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, art. 5 (d) (e) (f) and (g).

[76] Ibid., art. 7.

[77] The introductory Ramsar Convention brochure, 2nd ed., 2004.

[78] A/CONF.48/14/Rev.1.

[79] General Assembly resolution 37/7.

[80] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (United Nations publication, Sales No. E.93.I.8 and corrigenda).

[81] Global Programme of Action for the Protection of the Marine Environment From Land-based Activities, UNEP (OCA)/LBA/IG.2/7, 5 December 1995.

[82] FAO Code of Conduct for Responsible Fisheries, introduction.

[82] Ibid., art. 6.

[83] FAO Fisheries Report No. 658, Rome, 2002, appendix I.

[84] International Coral Reef Initiative, Framework For Action, approved 3 June 1995. Available at www.icriforum.org.

[85] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex.

[86] See Secretary-General's reports A/58/65, A/59/62/Add.1 and A/60/63/Add.1 for relevant information on these Conventions.

[87] This section is based on several articles and documents: H. Wang, op. cit.; ICES, op. cit.; S. Parsons, "Ecosystem Considerations in Fisheries Management: Theory and Practice", 20 *IJMCL* (2005), pp. 381-422; Secretariat of the Convention on Biological Diversity, "The Ecosystem Approach", 2004; United Kingdom Department for Environment, Food and Rural Affairs, "Charting Progress: An integrated assessment of the state of United Kingdom seas", and "Safeguarding Sea Life", both 2005; secretariat of the Convention on Biological Diversity, "Enhancing the Implementation of Integrated Marine and Coastal Area Management (IMCAM)", UNEP/CBD/COP/8/26/Add.1, 15 January 2006; Fisheries and Oceans Canada, "Canada's Ocean Action Plan", 2005; Commission of the European Communities, Communication from the Commission to the Council and the European Parliament, Thematic Strategy on the Protection and Conservation of the Marine Environment, COM(2005)504 final, Brussels, 24 October 2005; Proposal for a Directive of the European Parliament and of the Council establishing a Framework for Community Action in the Field of Marine Environmental Policy (Marine Strategy Directive), COM(2005)505 final, 2005/0211 (COD), Brussels, 24 October 2005.

[88] T. Hancock, "Towards Healthy and Sustainable Communities: Health, Environment and the Economy at the Local Level", quoted in Wang, op. cit., p. 42.

[89] Decision V/6 of the Conference of the Parties to the Convention on Biological Diversity, section A.

[90] "The Ecosystem Approach to Fisheries: Issues, terminology, principles, institutional foundations, implementation and outlook", FAO Fisheries Technical Paper No. 443, Rome, 2003, pp. 1-71.

[91] FAO Technical Guidelines for Responsible Fisheries 4, Suppl.2, Rome, 2003, pp. 1-112.

[92] Ibid.

[93] For example, the Indian Ocean Commission launched a study on the feasibility of a project for the conservation of coastal and marine ecosystems for countries located in the Indian Ocean. See the 2003 annual report of the Commission, available at www.coi-info.org/.

[94] For example, the Andean Community adopted a Regional Biodiversity Strategy for Tropical Andean Countries (decision 523 of 7 July 2002). Available on the website of the Community at www.comunidadandina.org/.

[95] The following regions are covered by the UNEP Regional Seas Programme: Black Sea, Caspian, eastern Africa, East Asian Seas, Mediterranean, North-east Pacific, North-west Pacific, South Pacific, Red Sea and the Gulf of Aden, ROPME Sea Area, South Asian Seas, South-east Pacific, the Western and Central Africa and the wider Caribbean. Non-UNEP regional seas organizations are: the Arctic, Antarctic, Baltic and North-east Atlantic.

[96] Compilation and Analysis of Economic Data in Support of UNEP's Regional Seas Programme and the Regional Seas Conventions and Action Plans, submitted to the seventh Global Meeting of the Regional Seas available at www.unep.org/regionalseas/Publications/INF.13.Economic.Activity.LMEs.pdf.

[97] Implementing the Ecosystem Approach in a Marine Ecoregion — The Baltic Example, HELCOM 26/2005, document 3/4, pp. 2-6, available on the HELCOM website at http://sea.helcom.fi/dps.html. See also Baltic Sea Regional Project and HELCOM-Progress Report, HELCOM 26/2005, document 9/2.

[98] Report of the Activities of the Commission 2004, HELCOM 26/2004, document 2/1, pp. 15-16.

[99] The project is managed in cooperation with the International Council for the Exploration of the Seas, the International Baltic Sea Fisheries Commission, the Swedish University of Agricultural Sciences and the World-Wide Fund for Nature of Sweden.

[100] Report of the Activities of the Commission 2004, HELCOM 26/2004, document 2/1, pp. 15-16.

[101] Summary record, Meeting of the OSPAR Commission, July 2005, OSPAR 05/21/1-E, pp. 14-26, available at www.ospar.org/. See also annex 19 of the summary record entitled "The Programme of Work for the Biodiversity Committee 2005-2006", which contains a list of activities for the implementation of the ecosystem approach.

[102] See statement in Record of the Meeting, Joint Meeting of the Helsinki and OSPAR Commissions 2003, annex 5, available at www.helcom.fi/ministerial_declarations/en_GB/ministerial/.

[103] Ibid., p. 4.

[104] Record of the Meeting, Joint meeting of the Helsinki and OSPAR Commissions 2003, annex 7.

[105] See www.ats.aq. The Antarctic is a low productivity ecosystem as a result of extreme weather conditions and extensive seasonal ice cover. The ecological and biological characteristics of the Antarctic marine species are unique, as the food chain is very short and based almost entirely on krill. See A/59/62/Add.1, para. 287.

[106] The Arctic marine environment has unique sociocultural aspects, economic potential and an integral role in climatic processes. Climatic and developmental pressures on the Arctic marine environment from shipping, dumping, offshore oil and gas development and land-based activities are increasing.

[107] The assessments results stated that in comparison with most other areas in the world, the Arctic remains a clean environment. However, for some pollutants, combinations of different factors give rise to concern in certain ecosystems and for some human populations. These circumstances sometimes occur on a local scale, but in some cases may be regional or circumpolar in extent.

[108] Overview Report on the Conservation of Arctic Flora and Fauna, available at www.arctic-council.org/files/87/CAFFReportSAOmay4and5_2004.pdf.

[109] Seoul Oceans Declaration, preambular para. 7, operative paras. 1 and 9. Available at www.apec-oceans.org/.

[110] A Survey to Determine the Status of implementation of the APEC Seoul Oceans Declaration Across APEC Member Economies, APEC MRC05/2005 Project, pp. 6, 9 and 10, available at www.apec-oceans.org/. It should also be noted that 68 per cent of the APEC members that responded stated that their economy had been involved in a regional seas programme implementing the ecosystem approach since 2002. See also Tsamenyi, M., Djalal, H. and Palma, M., Institutional Frameworks for Ecosystem-Based Management in the Asia-Pacific Region, available at www.oceans.gov.au/pdf/EBM/EBM-Asia%20Pacific%20Paper.pdf.

[111] Joint Ministerial Statement, Bali 2005, para. 11, available at www.apec-oceans.org/.

[112] Bali Plan of Action, p. 3, available at www.apec-oceans.org/.

[113] Commission of the European Communities, Communication from the Commission to the Council and the European Parliament, Thematic Strategy on the Protection and Conservation of the Marine Environment, COM(2005)504 final, Brussels, 24 October 2005; Proposal for a Directive of the European Parliament and of the Council Establishing a Framework for Community Action in the Field of Marine Environmental Policy (Marine Strategy Directive), COM(2005)505 final, 2005/0211 (COD), Brussels, 24 October 2005.

[114] Towards a Future Maritime Policy for the Union: a European Vision for the Oceans and Seas, Communication to the Commission from the President and Mr. Borg; The Future Maritime Policy and the Regions, speech by J. Borg, 2 December 2005, available at http://europa.eu.int/comm/fisheries/maritime/index_en.htm.

[115] See the website of the NEPAD secretariat at www.nepad.org/2005/files/home.php.

[116] Available at www.africa-union.org/.

[117] The Action Plan is available at www.environment-directory.org/nepad/content/action_plan.asp.

[118] Cluster of projects on coastal, marine and freshwater biodiversity, see Background Paper and Action Plan on Conservation and Sustainable Use of Coastal, Marine and Freshwater Resources, available at www.environment-directory.org/nepad/content/coastal.asp. Other projects which are of relevance include climate change impacts on coastal and marine ecosystems.

[119] Pacific Islands Regional Ocean Policy and Pacific Islands Regional Ocean Framework for Integrated Strategic Action available at www.spc.int/piocean/forum/New/forum.htm. See also Pacific Islands Regional Ocean Forum communiqué.

[120] Initiative 1.4 and 3.1, Pacific Islands Regional Ocean Framework for Integrated Strategic Action.

[121] See the website of the SOPAC secretariat at www.sopac.org/.

[122] Article II of the CCAMLR Convention.

[123] CCAMLR Conservation Measure 25-02 (2003) and Conservation Measure 25-03 (2003).

[124] CCAMLR Conservation Measure 25-01 (1996).

[125] Resolutions C-04-09 and C-05-02 provide conservation measures for tunas; resolutions C-04-05, C-04-07 and C-05-03 provide measures for by-catches.

[126] IATTC resolution C-04-05.

[127] IATTC resolution C-04-05.

[128] ICCAT resolutions 03-14 and 96-15.

[129] IOTC recommendations 05/08 and 05/09.

[130] Articles 9-12 of the NAFO Conservation and Enforcement Measures.

[131] Contribution of NEAFC to the present report.

[132] See the outcomes of the Ocean Policy Summit, Portugal, 2005, available at www.globaloceans.org/tops2005/index.html.

[133] H. Wang, "An Evaluation of the Modular Approach to the Assessment of Management of Large Ecosystems", *Ocean Development and International Law*, vol. 35 (3), 2004, pp. 277-280. See the next section on capacity-building in the present report.

[134] TOPS 2005, The Ocean Policy Summit, available at www.globaloceans.org/tops2005/index.html.

[135] The Integrated Oceans Management Working Group, Oceans Board of Management, the National Oceans Advisory Group and the Oceans Policy Science Advisory Group have been established. See National Oceans Office, Australia's Oceans Policy, at www.oceans.gov.au/content_policy_v1/default.jsp; B. Addison and D. Petrachenko, Australia's Ocean Policy, available at www.globaloceans.org/tops2005/pdf/Australia.pdf; S. Parsons, Ecosystem Considerations in Fisheries Management: Theory and Practice, available at www.dfo-mpo.gc.ca/fgc-cgp/documents/parsons_e.htm.

[136] See Canada's Ocean Strategy website at www.cos-soc.gc.ca/; Fisheries and Oceans Canada, www.dfo-mpo.gc.ca/canwaters-eauxcan/index_e.asp; and S. Parsons, ibid.

[137] P. A. Torres and others, Mexico's Case Study, Research Task Force on Ocean Policies, available at www.globaloceans.org/tops2005/pdf/Volume2OceanPolicies.pdf.

[138] J. Batongbacal, The Philippines National Marine Policy: Navigating Unpredictable Currents, Research Task Force on Ocean Policies, ibid.; see also the website of the Department of Environment and Natural Resources at www.denr.gov.ph/.

[139] Global Environment Facility Project Executive Summary, Integrated Marine and Coastal Resources Management, Senegal, available at www.gefweb.org/Documents/Work_Programs/wp_Feb04/Bio_-_Senegal_-Executive_Summary.pdf. See also the website of the GIRMaC Project at www.girmac.sn/.

[140] R8, List of recommendations, available at www.jncc.gov.uk/page-2815; see also Defra, Marine: UK Marine Policy at www.defra.gov.uk/environment/water/marine/uk/policy/marine-bill/ and *Compilation of Summaries of National and Regional Ocean Policies* (draft), Research Task Force on National Ocean Policies (2005), available at www.globaloceans.org/tops2005/pdf/OceanPolicySummaries.pdf.

[141] Government Bill in Progress, see www.commonsleader.gov.uk/output/page966.asp.

[142] Safeguarding Sea Life, p. 5.

[143] The Commission has completed its work; see its website at www.oceancommission.gov/welcome.html.

[144] Final report of the Commission, executive summary, page 5.

[145] United States Ocean Action Plan, page 3, available at http://ocean.ceq.gov/actionplan.pdf. See also B. Cicin-Sain, C. Ehler and G. Kuska, USA Ocean Policy, available at www.globaloceans.org/tops2005/pdf/USA.pdf.

[146] Ibid.

[147] Additional information on capacity-building programmes to protect marine ecosystems is contained in A/58/65.

[148] The Partnerships in Environmental Management for the Seas of East Asia do not mention the concept of ecosystem approach but recognize the relevance of the protection of marine ecosystems in environmental management. Ecosystem-based management workshop, Cairns, Australia, 20 June 2003.

[149] Ibid.

[150] Contribution if the World Bank to the Secretary-General's report on oceans and the law of the sea.

[151] See A/58/65.

[152] See the International Waters website at www.undp.org/gef/undp-gef_focal_areas_of_action/sub_international_water.html; see also UNDP-GEF brochure "Protecting International Waters Sustaining Livelihoods", available on the same website.

[153] See the brochure produced jointly by UNEP and the National Oceanic and Atmospheric Administration, available at www.unep.org/regionalseas/Publications/RSP_Large_Marine.pdf.

[154] Ibid.

[155] H. Wang, op. cit., p. 272.

[156] Ibid., p. 276.

[157] Ibid., pp. 276-277.

[158] See also para. 128.

[159] See www.gpa.unep.org.

[160] United States Department of Energy at www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Background.html.

[161] Double Hull Tankers: High-Level Panel of Experts Report, presented to IMO by the European Commission, together with the European Maritime Safety Agency. See A 24/INF.5 and www.emsa.eu.int/Docs/workshops/dh%20tanker%20panel%20final%20report%20complete%203.6.05.pdf.

[162] Ibid.

[163] Information provided by the Interpol general secretariat.

[164] IMO Assembly resolution A.983(24) adopted at the twenty-fourth session of the IMO Assembly (21 November to 2 December 2005).

[165] The International Oil Pollution Compensation Funds reported that the total amount available for compensation for each incident in the States which are members of the Supplementary Fund, i.e., Barbados, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Lithuania, the Netherlands, Norway, Portugal, Spain and Sweden, was approximately $1.07 million.

[166] IMO Assembly resolutions A.976(24) and A.977(24).

[167] A 24/5(b)/2, para. 30.

[168] Report of the 27th Consultative Meeting of Parties to the London Convention, IMO document LC.27/16, and Report of the 28th Meeting of the Scientific Group, LC/SG28/14.

[169] As stated in the previous report (A/60/63).

[170] The ILO Guidelines have also been translated into Bengali, Chinese, Hindi and Turkish.

[171] This section is based on the FAO contribution to the report.

[172] The parties are: Benin, Belize, Canada, Japan, Namibia, New Zealand, Norway, the Syrian Arab Republic, the United States of America and the European Community.

[173] For developments in other forums, see www.fao.org/Sids.

[174] UNEP/CBD/SBSTTA/11/11.

[175] The report on that meeting is contained in UNEP/CBD/COP/8/3.

[176] Available, respectively, at www.biodiv.org/doc/publications/cbd-ts-19.pdf and www.biodiv.org/doc/publications/cbd-ts-20.pdf.

[177] See UNEP/CMS/Resolution 8.14.

[178] See UNEP/CMS/Resolution 8.13; UNEP/CMS/Resolution 8.14; UNEP/CMS/Recommendation 8.16; UNEP/CMS/Resolution 8.22; and UNEP/CMS/Recommendation 8.17.

[179] See UNEP/CMS/Resolution 8.2.

[180] The workshop was mandated by Decisions 13.18 and 13.19 of the Conference of the Parties to CITES.

[181] The report of the workshop was not available at the time of writing. When finalized, it will be circulated to all parties and FAO for comment. Comments will be incorporated into a discussion paper and draft resolution that the secretariat will prepare for consideration at the 54th meeting of the CITES Standing Committee (Geneva, 2-6 October 2006).

[182] See the Final Report of the XXVIII ATCM and relevant documents, available at www.ats.aq/.

[183] See the report of the meeting, available at www.icriforum.org/.

[184] UNEP Regional Seas Programme contribution.

[185] Based on UNEP Regional Seas regions.

[186] While the Proceedings of the Conference are not yet available, information can be found at www.inpacongress.org/.

[187] See General Assembly resolution 60/197 of 22 December 2005 on protection of global climate for present and future generations. See also http://unfccc.int for details.

[188] NASA, "2005 was the warmest year in a century", 26 January 2006, available at www.nasa.gov/vision/earth/environment/2005_warmest.html.

[189] Jonathan A. Foley, "Tipping Points in the Tundra", *Science*, vol. 310, No. 5748 (28 October 2005), pp. 627-628.

[190] Published in *Science* on 17 February 2006, see news release dated 16 February 2006 at www.jpl.nasa.gov/news.cfm?release=2006-023.

[191] Article in *Nature*, 1 December 2005, reported in *The Guardian*, 1 December 2005, p. 3.

[192] Overpeck et al., "Arctic System on Trajectory to New, Seasonally Ice-Free State", *EOS Transaction, American Geophysical Union*, 86(34), 2005, p. 309, available at http://atoc.colorado.edu/~dcn/reprints/Overpeck_etal_EOS2005.pdf.

[193] NOAA Climate Prediction Center, "El Niño/southern oscillation (ENSO) diagnostic discussion", 9 February 2006, at www.cpc.noaa.gov/products/analysis_monitoring/enso_advisory/. La Niña events are operationally defined using the Oceanic Niño Index (ONI), which is the three-month running-mean values of sea surface temperature departures from average in the Niño 3.4 region of the central Pacific. This definition was adopted by the United States and 25 other countries in North and Central America and the Caribbean in April 2005.

[194] For further details see A/59/62/Add.1, para. 220.

[195] Review of Small Cetaceans: Distribution, Behaviour, Migration and Threats by B. M. Culik. Illustrations by M. Wurtz. UNEP/CMS secretariat, Bonn, Germany.

[196] See report of the meeting (A/60/99), para. 12 (d).

[197] See the report of the Chairman of the International Whaling Commission on the 56th Annual Meeting, Sorrento, Italy, 19-22 July 2004; Chairman's summary report for the 57th Annual Meeting (Revised 1), Ulsan, Republic of Korea, June 2005.

[198] Bulletin EU 10-2004, Environment (14/17).

[199] Second Meeting of Parties, resolution 2.16 on the assessment and impact assessment of man-made noise. The report of the meeting is available at www.accobams.org/.

[200] For a definition of the word "tsunami", see A/60/63.

[201] Estimates vary from 217,000 to 278,000 people killed by flooding caused by the tsunami.

[202] "UN tsunami envoy, Bill Clinton urges immediate steps to prevent disaster", *United Nations News*, 20 January 2006.

[203] See A/60/63/Add.2.

[204] "Report from United Nations Special Envoy Clinton says tsunami-hit countries make good progress", United Nations News Service, 28 December 2005.

[205] The Central Emergency Revolving Fund or Global Emergency Fund was established by the General Assembly on 15 December 2005 in its resolution 60/124.

[206] For additional information, visit the website of the Office of the Coordinator for Humanitarian Affairs at http://ochaonline.un.org/.

[207] "One Year after the tsunami", *The New York Times*, 28 December 2005.

[208] "Lack of coordination hits housing hardest", *Financial Times*, 23 December 2005.

[209] "UN agency predicts building boom for tsunami-hit Indonesian region", United Nations News Service, 28 December 2005.

[210] "Tsunami Legacy: Extraordinary Giving and Unending Strife", *The New York Times*, 25 December 2005.

[211] For additional information on tourism industry recovery, see the UNWTO website at www.world-tourism.org/newsroom/Releases/2006/january/06_01_24.htm.

[212] Contribution of ESCAP to the report of the Secretary-General, January 2006.

[213] Early Warning Systems, United Nations Office of the Special Envoy for Tsunami Recovery, 29 December 2005.

[214] Contribution of UNESCO/IOC to the report of the Secretary-General, February 2006.

[215] IOC submission, February 2006.

[216] The Indian Ocean Tsunami Warning and Mitigation System: one year after, 29 December 2005, at http://portal.UNESCO.org.

[217] On 6 February 2006, the Court elected Judge Rosalyn Higgins (United Kingdom) as President of the Court and Judge Awn Shawkat Al Khasawneh (Jordan) as Vice-President for a term of three years as of that date.

[218] www.icj-cij.org.

[219] *Official Records of the General Assembly, Sixtieth Session, Supplement No. 4* (A/60/4).

[220] See also paras. 22-24 above.

[221] Text available at www.itlos.org.

[222] See Official Journal of the European Union of 10 January 2004 (2004/C7/39), Proceedings of the Court of Justice and the Court of First Instance of the European Communities (18 January 2006) and the website of the Court of Justice of the European Communities at www.curia.eu.int/.

[223] See *Mox Plant Case* in document A/58/65/Add.1.

[224] See reports in documents A/60/63/Add.2 and A/60/90.